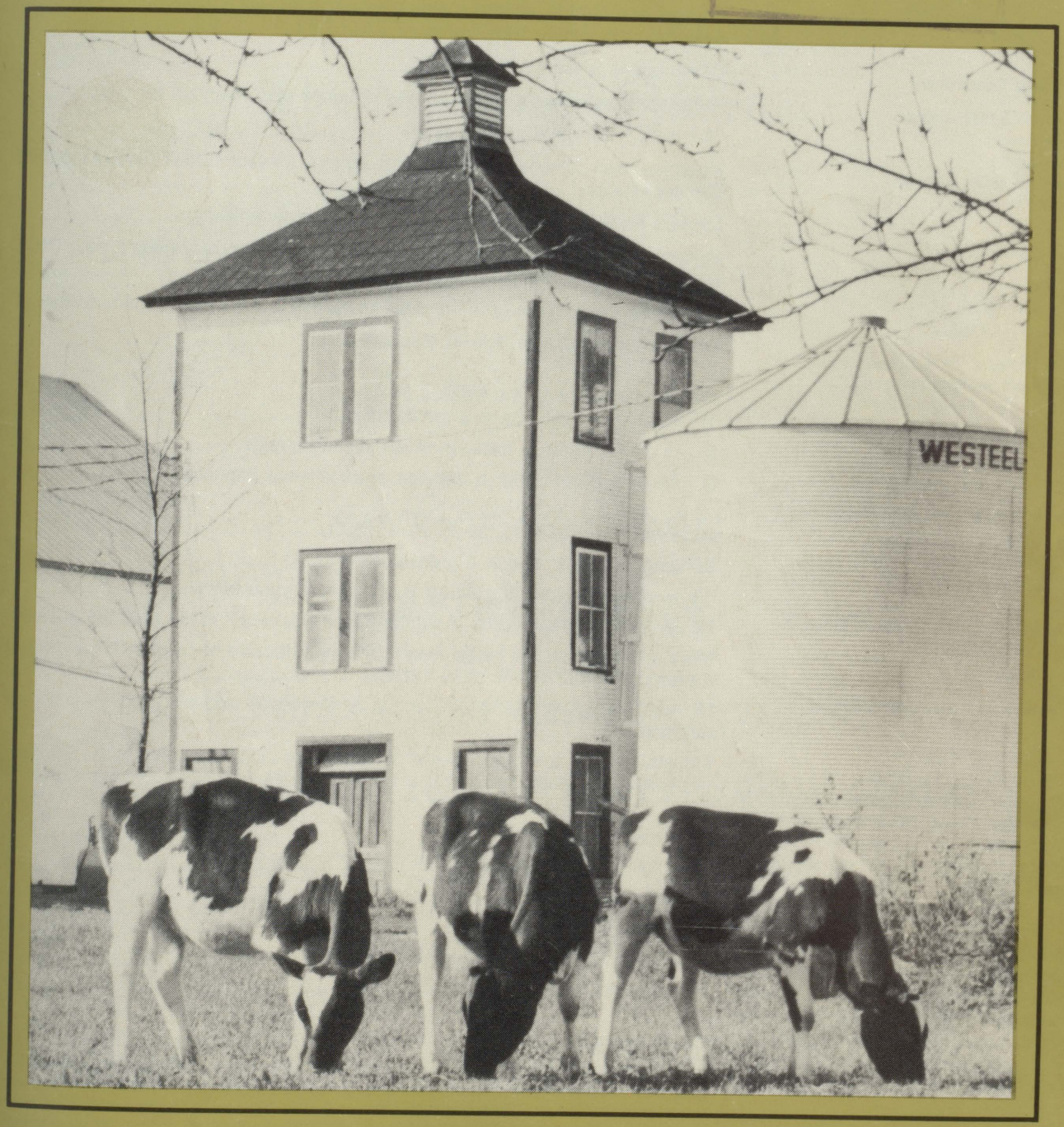
THE MACDONALD JOURNAL

FEBRUARY
1985



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This Issue

Features

Cover Story

It's the annual dairy issue time again and this year DHAS Director Dr. John Moxley and his colleagues have outdone themselves in providing us with dairy features that may be found throughout the magazine. One staff member even gave us a story by leaving Macdonald to take up dairy farming in New Brunswick! What makes this dairy issue particularly special for us is being able to share with our readers the story of one of Quebec's top dairy families — the Nesses of Howick. Our cover photo by Jim Rose was taken on the Terrace Bank Farm which, before 1920, was operated as a dairy — note the building in the background now used to store feed. Thanks to all concerned for this special issue.

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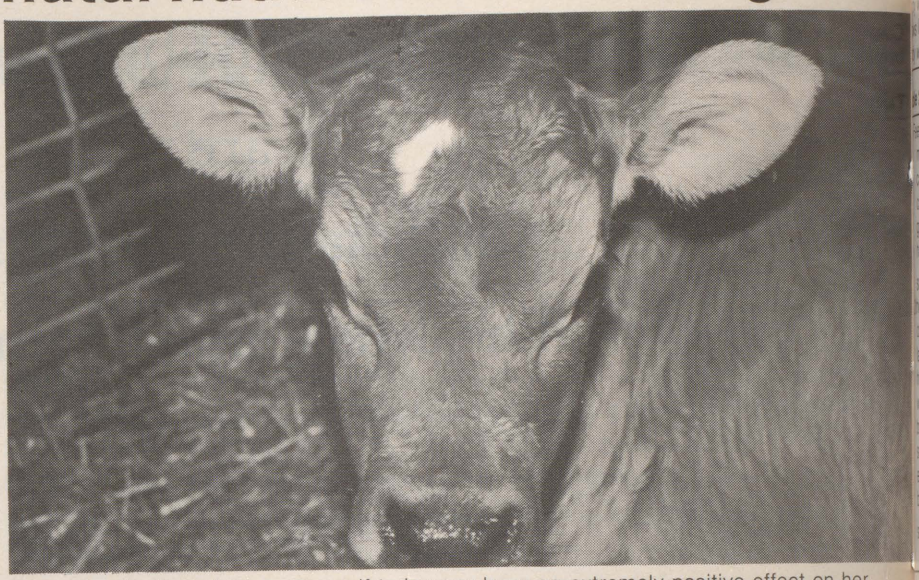
The role of nutrition in attaining maximum milk production potential from replacement heifers

Part I Prenatal nutrition to weaning

by Professor Elliot Block
Department of Animal Science



The proper feeding of this young calf today can have an extremely positive effect on her production later on.

Many of our dairy producers take their newborn heifer calves for granted. They feel that being out of a good-to-excellent dam and bred with the best semen affordable this heifer calf will eventually be the best cow in the herd. This may or may not be true depending upon many other factors such as health, environment, and nutrition. In fact, the two most important factors determining an animal's level of production are genetics and nutrition. I believe that many dairy producers have a good idea of how genetics play a role in the eventual production by a heifer; however, fewer producers have any idea as to how the nutrition of a heifer can affect her productivity as a lactating cow.

In this issue and the next two *Macdonald Journals* I will illustrate how nutrition can affect a heifer's production as a lactating cow and give some general guidelines on nutrition of replacement heifers with the potential for high production.

I. Prenatal nutrition

There are not many people who really think of the calf before it is born. The dry cow is treated as a non-productive animal waiting to produce milk. This is not a very good attitude because even though the dry cow is not producing milk she is producting a calf that might be a heifer. These last two months before calving are when the calf inside of her is growing most rapidly. It is during this time that the nutrient requirements for maintaining a mature cow increases; not because she needs more nutrients but because the calf she is carrying needs nutrients.

Once a cow is safe in calf there is little that can be done to affect the calf. Moderate insufficiencies of protein or energy does not affect the eventual birth weight of a calf. However, a severe deficiency of these nutrients can result in abortions, small calves, and increased mortality. Even in the two months before calving a moderate energy insufficiency will not cause calves to be born smaller. Table 1 is an illustration of some results that I summarized from the Macdonald College dairy herd over a two-year period. The cows that gained body weight during the dry period represent cows that had been overfed energy while cows that lost weight during the dry period represent cows that had been slightly underfed energy during the dry period. Note that both groups of cows gave birth to calves that weighed the same. On the other hand, a severe energy insufficiency in dry cows will cause you to have smaller calves and an increase in calf mortality.

Protein nutrition presents a different picture. In the stages of early pregnancy, a mild protein insufficiency will not harm the calf. A severe or a mild deficiency in protein for a long time can cause abortions, early embryonic death, or small calves at birth. Non-protein nitrogen (NPN) (i.e., urea) should never exceed one per cent of the total ration dry matter for pregnant cows. Above this one per cent level the NPN can be toxic to the unborn calf and may cause abortions. In fact, if you feed cows a high silage ration, the level of NPN added to your ration should be less than one per cent of the dry matter since silages themselves may contain considerable levels of NPN depending upon the type of fermentation that occurred during the ensiling process. Protein nutrition for the unborn calf becomes more critical during the last two months before calving. Since the fetus (the unborn calf) consists mainly of protein in the form of muscles and vital organs, and since most of the growth of this fetus occurs in this period of time, even a mild protein insufficiency of the pregnant cow will affect the size and mortality of the calf.

The mineral nutrition of your pregnant cows will also affect the size and liveability of calves. You must keep in mind that the unborn calf has to grow bones, produce blood cells, transmit nerve impulses, and, in general, carry out most of the body functions that a newborn calf does. This means that any mineral deficiency can cause fetal problems. This same discussion holds true for the vitamins. The water soluble vitamins (vitamin C and the B vitamins) are produced in sufficient quantities by the pregnant cow (assuming she is fed properly for the calf). However, the fat soluble vitamins (vitamins A, D, and E) are as critical to the fetus as they are to the cow. A deficiency of vitamin A in cows can cause calves to be born weak, blind, with diarrhea or show muscular incoordination. A vitamin D deficiency can cause calves to be born weak, dead, or with soft bones (rickets). A vitamin E insuffi-

Table I. Dry period energy balance and its effect on calf birth weight

Dry period	Number of cows	Body weight at beginning of dry period (kg)	Days dry	Body weight change (kg)	Calf birth weight (kg)
Cows gaining body weight	41	696.8	54.5	+29.1	44.0
Cows losing body weight	38	701.4	45.0	-29.0	43.9

Table 2. Cost of raising replacement heifers to 540 kg in 24 months

1. Feed costs :	
milk replacer, 18 kg	$ 19.00
calf starter, 41 kg	8.50
calf grower, 59 kg	9.10
grain mix, 154 kg	22.00
hay equivalent, 4.5 tons	315.00
sub total	$373.60
2. Other costs :	
original calf value	$125.00
labour, 30 hours	120.00
housing and equipment	100.00
vet. med. and drugs	25.00
breeding fees	15.00
supplies and utilities	16.50
equipment, fuel, repairs	18.00
bedding	33.00
subtotal	$452.50
GRAND TOTAL	$826.10

Table 3. Calf losses — breakdown by age at death[a]

No. calves	Age at death	% loss
1211	Less than one week	9.8
706	1 week to 1 month	5.7
314	1 month to 6 months	2.6
65	6 months to 1 year	0.5
2296 (total)	Total during first year	18.6
1727	At birth	6.6
4037	Total losses including stillbirths	25.2

[a]Survey of 545 herds representing 29,000 cows

Table 4. Colostrum feeding and calf survival

Days fed colostrum	No. herds	% died		Total mortality
		0-14 days	15-60 days	
0	6	19.7	2.4	22.1
1	22	8.4	2.7	11.1
2	89	10.9	3.2	14.1
3	345	7.8	2.7	10.5
Time of feeding colostrum after parturition				
less than 6 hrs.	267	7.6	2.6	10.2
6-12 hrs.	151	10.5	2.9	13.4

ciency can cause the cow to have cardiac failure at calving or cause the calf to be born with nutritional muscular dystrophy (white muscle disease).

In summary of this section you should realize that you cannot cause calves to be born larger than they are genetically capable of by manipulating the nutrition of the pregnant cow. However, you must be sure that the pregnant cow is fed properly so the calf can attain its potential maximum size at birth; otherwise these valuable newborn heifers, and sometimes bull calves — will be small, weak and/or have a high mortality.

II. Postnatal Nutrition

Before getting into specifics about nutrition let us define our goals for the heifer calf. Our major goal should be to produce a replacement heifer that is of sufficient size to breed at 13 to 15 months of age (calve at 22 to 24 months of age). Our second goal is to have a heifer with sufficient size to produce as high a volume of milk that is possible for a first calf heifer.

Notice that emphasis is being placed on size, which includes body stature and body weight. A Holstein heifer should weigh 340 to 360 kg and measure 160 cm around the heart girth at breeding; at calving this heifer should weigh 540-550 kg and measure 165 to 170 cm around the heart girth. If these body weights are obtained with smaller heart girths, it means that your animals are gaining weight but not growing. The reason that size is emphasized is because of the following facts:

1. Large-sized animals have less difficulties at calving;
2. Large-sized animals tend to produce more milk than animals that weigh the same but are smaller in size.

The reasons for wanting a heifer to calve by 24 months and produce high levels of milk are obvious. We want the heifer to start paying the debt incurred for raising her by producing high quantities of milk early in her first lactation, we want to start making a profit as early as possible in her first lactation, and we want to be able to make an intelligent decision about the future of this heifer in the herd as a dam for other offspring.

Regarding the cost of raising a replacement heifer, Table 2 gives an approximate breakdown of these costs. The total cost of $826.10 is the amount of money that should be made (above feed, labour and housing costs) in order for the heifer to wipe out the debt of raising her.

Now let us examine some of the nutritional factors that we can control to attain our goals for this heifer calf.

A. Birth to Weaning

Once a calf is born our biggest concern is keeping it alive. Table 3 has data showing that most of the problem is in the first week of life. Some of the calf-loss problem is related to management factors such as season of year, housing, sanitation, ventilation, etc. The single nutritional factor that can decrease calf losses is feeding the calf its dam's colostrum (first milk) within the first few hours post-calving. Table 4 shows that farmers who did not feed any colostrum had higher calf losses in the first two weeks of life than those farmers feeding colostrum. Table 4 also indicates that calf losses are lower if colostrum is fed within the first six hours of life than if fed between six and 12 hours post-calving. The reason why colostrum is important is because it contains immune globulins (Ig) which protect the calf from some diseases.

These Ig's can only be absorbed from the calf's intestine for its first 24 hours of life, which is why colostrum should be fed as soon after birth as possible. A second reason to feed colostrum is because it is the best feed for calves that you will **never** buy!! A cow that calved will, within six hours, produce colostrum containing 12 per cent protein, 8.5 per cent fat and 27 per cent total solids. Therefore, colostrum must be fed to newborn calves to provide immunity and, if there is a surplus of colostrum, it should be fed to all your calves because of its high nutritional quality and low cost.

The newborn calf has an undeveloped rumen. Since the functioning rumen is responsible for the utilization of fibrous feeds, feeding forages to newborn calves does not make nutritional sense. However, it is our responsibility to help this calf develop its rumen as soon as possible to allow the calf to utilize forages early in life. A liquid diet will not allow rumen development because liquid "bypasses" the rumen to the abomasum (true stomach). The calf's rumen requires digestible dry feed to cause it to develop in size and in its functional capacity.

A question arises: how are calves to be fed pre-weaning and how and when are they weaned. Opinions differ as to the answer. Some people believe in early weaning, others in late weaning; some people believe in offering **no** dry feed until weaning, others offer dry feed at birth. There are many other variations. Personally, I prefer to see calves weaned at 35 days (five weeks) with dry feed offered as soon as possible because a calf that is weaned early will not cost as much to feed with bulk-tank milk or milk replacer and, if dry feed is offered early in life, the rumen will develop sooner allowing for better forage utilization earlier in life. Figure 1 shows a general feeding program for heifers from birth. Notice that Figure 1 does not state the age of the calf at weaning. This is because weaning should not be done according to the calendar but rather when the calf is consuming approximately 0.5 kg of starter or grower ration. The way this can be accomplished is as follows: Newborn calves can be offered eight per cent of their original birth weight as whole milk, colostrum or reconstituted replacer per day; at two weeks of age this can be increased to 10 per cent of their original birth weight; if you wish to wean at five weeks, then at the beginning of week four (28 days) cut each liquid feeding in half (still feeding twice a day), thus forcing the calf to consume more dry feed; when the calf is consuming 0.5 kg of dry feed stop liquid feeding (this should take seven days). By using this weaning procedure, there should be little-to-no reduction in growth rate at weaning as seen with other weaning programs.

After the colostrum feeding period is over, there are three alternatives for liquid feeding: whole milk, colostrum (fresh or fermented), and milk replacer. Fresh milk or colostrum are the best liquid feeds with milk being the most expensive if your cows are producing within your quota. These are the best feeds because of their high digestibility and high quality.

Fermenting excess colostrum as liquid feed for calves has the advantages of being cheaper than milk (since it cannot enter the bulk tank), is less expensive than milk replacer, provides equivalent calf performance as whole milk and better performance than replacer, and has been indicated to improve calf health because of its low pH (high acidity) and bacterial population which improves the environment in the intestine. Fermented colostrum should not be fed instead of the first feeding of fresh colostrum. The fermentation process destroys some of the Ig; therefore, fermented colostrum will not give a newborn calf the immunity it needs. Making fermented colostrum is rather simple. Use three plastic garbage pails with lids (one for filling, one for fermenting, and one for feeding). Simply add colostrum to the garbage pail being filled every day and after a week the fermentation is complete. Stir the fermented colostrum thoroughly only before each feeding. The only time problems occur is in very hot weather where the fermented colostrum may spoil. Never add bloody colostrum or colostrum from treated cows; the antibiotics in treated colostrum will prevent fermentation.

Mastitic and treated milk can also be fed to calves; however, do not feed these to calves during the first two days of life. Just as calves can absorb Ig for the first 24 hours, they can also absorb intact bacteria and antibiotics, which may cause problems. After this period you may find that calves fed treated milk will out-perform those fed other liquids because of the antibiotics present.

Feeding milk replacers can be tricky; some farmers have no problems, others always have problems. Replacers are less expensive than whole milk (if quota milk is being used); however, the quality of the replacer influences the cost. Table 5 has a listing of milk replacer ingredients broken down into optimum, acceptable, and inferior ingredients.

Figure 1. Example feeding program for dairy heifers

Period after birth	Liquid: Milk or Replacer or Colostrum	Grain or Starter	Hay	Silage
0 – 2 days	FRESH COLOSTRUM			
0 – weaning				
– week 1	8% of birth weight	Introduce		
– week 2	up to 10% of birth weight	Free choice	Introduce	
wean		when consuming 0.4 to 0.6 kg/day		
weaning – 4 mo.	Rumen developed by 8 – 12 weeks	2.2 kg/day (maximum)	Free choice	Introduce
4 mo – breeding	Period of rapid growth	0 – 2 kg/day	Balanced for energy and protein	
Breeding – parturition	Quality of forage determines grain required		Primarily forages	

A DHAS DATA PROCESSING CENTRE FOR THE MARITIMES

by Norman Campbell
Manager, DHAS

Getting your monthly DHAS (Dairy Herd Analysis Service) report back as quickly as possible is important as the report contains management information. The Maritime DHAS reports are now processed through our office in Moncton.

In recent years the Nova Scotia, New Brunswick and Prince Edward Island Ministry of Agriculture staff involved with DHAS have tried special mail and courier services to improve the service to their dairymen. In June 1984, DHAS installed a new data entry system at Macdonald College. This data system uses a mini computer and stores the data on a single disk. The data are transferred at regular intervals to the main computer. A smaller version of the same data entry system was installed in our Moncton office in October. A printer was added so that reports could also be printed.

The Planning and Development of this Moncton processing centre coincided with the return of Martha (Sullivan) Bowman (Dip. '77) to New Brunswick. She was active in 4-H work before coming to Macdonald and has been an editor with DHAS since graduation. Martha operates the centre with the assistance of Jocelyn Wallace a data entry operator. After milk analysis all Maritime test day reports are shipped to Moncton. The data are entered and at daily intervals sent by telephone line to Macdonald. The data are edited and processed and returned by telephone to the Moncton office where the test day reports are printed and mailed to dairymen. Any manual editing of the test day data is carried out at the Moncton office. In this way questions about incoming data can be handled more promptly.

Dairymen and Maritime DHAS staff are beginning to see improvement in the turnaround time of test day reports.

The DHAS data centre is located with the Moncton, New Brunswick, Department of Agriculture offices at 381 Killam Drive.

Visitors are welcome at the Moncton DHAS centre; however, it would be desirable to call ahead to arrange a time (506) 384-7825, as Martha and Jocelyn process nearly 600 herds with over 25,000 cows each month.

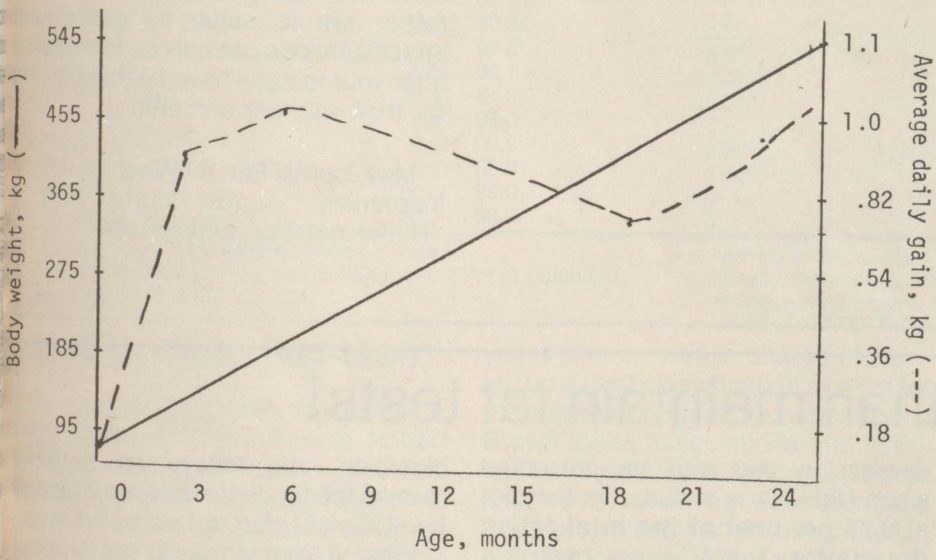


Figure 2. Growth standards for Holstein heifers from birth to 24 months.

Table 5. Protein sources for milk replacers

Optimum	Acceptable	Inferior
– skim milk powder – buttermilk powder – dried whole whey – delactosed whey – casein – milk albumin	– specifically manufactured soy flour and soy concentrates	– meat solubles – fish protein – soy flour – distillers' solubles – oat flour – wheat flour

Generally, the best ingredients are those derived from milk or milk processing because these are the most digestible to young animals. Replacer ingredients derived from grains and from meat or fish are not good due to lower digestibility. These inferior ingredients leave a residue in the intestine that can favour the growth of certain bacteria causing calf scours. If soy flour or concentrate is specially manufactured for milk replacer, then the product is an acceptable ingredient because of its higher digestibility. Another indication of replacer quality is to look at the colour. White and off-white replacer powders usually means that they are manufactured from predominantly milk products and were not overheated in drying. Yellow-to-brown replacers indicate poor quality ingredients or overheating when they were dried. Replacers made of milk products that were overheated (brownish in colour) can be as bad as replacers made with inferior products.

In order for heifers to attain our goals for them by breeding age they should be gaining approximately 0.65 kg per head daily. This figure of 0.65 kg/day is an average. Figure 2 shows the body weights and average daily gain of heifers from birth to calving needed to achieve our goals. In addition to Figure 2, Table 6 gives a more detailed breakdown of goal weights and girth sizes for Holstein heifers from birth to calving.

Approximately 65 per cent of the variation seen in body weight gains from birth to weaning may be related

Table 6. Growth guide for Holstein calves and heifers[a]

	Age, months									
	0	2	4	6	9	12	15	18	21	24
Girth (cm)	78	94	109	127	145	156	165	173	180	188
Body weight (kg)	43	71	121	176	248	317	358	405	456	511

[a]The majority of female animals should fall within ± 10% of the body weights indicated. Flesh or condition should also be considered. Both excessively thin or overconditioned animals should be avoided, especially the latter.

Table 7. Calf starter recommended specification[a]

Nutrient	% of ration dry matter	Added minerals	mg/kg of dry matter (ppm)
Crude protein	16–18	Manganese	60
TDN, minimum	70–72	Iron	90
Calcium	0.60	Copper	7
Phosphorus	0.45	Zinc	115
Magnesium	0.24	Cobalt	2.3
Sulfur	0.24	Iodine	3.7
Potassium, minimum	0.70	Selenium	0.15
Added Vitamins		**IU/kg**	
Vitamin A		11000	
Vitamin D		2200	
Vitamin E		11–22	

[a]Chlorotetracycline or oxytetracycline are sometimes included at levels to provide 31 mg of active drug/kg.

Table 8. Example of calf starter

Ingredient	%
Ear or shelled corn[a]	39.03
Oats, barley[b]	25.00
Soybean meal, 44%	28.00
Molasses[c]	5.00
Trace mineralized salt	1.00
Calcium sulfate (22% S)	0.10
Dicalcium phosphate (23% Ca, 18% P)	0.50
Limestone (35% Ca)	0.90
Magnesium oxide (54% Mg)	0.20
Vitamin A, D, E. premix[d]	0.20
Selenium premix (.02% Se)	0.08

[a]Cracked, flaked, or medium grind
[b]Crimped, rolled, or medium grind
[c]May vary from 0–10%
[d]Assumed potency (IU/kg of premix) : A–5500000; D–1100000; E–5500

to the grain offered to these calves. Table 7 shows the recommended specifications for calf starters and Table 8 gives an example of a typical starter ration using dairy herd grain mix, which may be substituted for a calf starter (it can be done at times) because the nutrient compositions are similar. However, this should be done with extreme caution. Although the dairy herd mix sometimes contains the nutrients required in a starter ration the ingredients used may be harmful for the calf and some ingredients the calf needs may not be included. For example, the dairy ration may contain urea, which cannot be used by calves and may be harmful, or the grains in the dairy ration may not be ground fine enough to be utilized by calves, or there may not be enough molasses in the dairy mix to make the grain palatable to calves. If hay is offered to calves pre-weaning, be sure it is of very high quality to stimulate intake.

In the following articles general recommendations will be given on feeding heifers. These recommendations are not balanced rations but rather are to serve as guidelines. Specific rations can only be formulated after your forages have been analyzed for their nutrient contents.

May Journal Part II "Weaning to prefreshening"; August Journal Part III "Heifer nutrition and growth."

Buffers do more than maintain fat tests!

by Professor Elliot Block
Department of Animal Science

Most of you already know about the use of a buffer, such as sodium bicarbonate ($NaHCO_3$), to maintain butterfat test when your cow's diet does not contain enough forage or is chopped too finely. To review this briefly, when forages (hay and/or silage) are chopped fine or when a cow's ration contains less than 40 per cent forage on a dry basis, feeds are rapidly fermented in the cow's rumen causing an increased acidity and a change in the volatile fatty acids produced from the fermentation. Additionally, less saliva is produced by the cow; saliva buffers the rumen. This results in a butterfat depression that can be corrected when $NaHCO_3$ is included in the diet at **0.75 per cent of the total ration dry matter.** This 0.75 per cent is a magic number; if you add less than this, you will not relieve the fat depression. Additionally, if you use more than one buffer, such as a "buffer-pak," you still need the magic number of 0.75 per cent $NaHCO_3$. If, for example, you mix $NaHCO_3$ with the grain mix and you feed cows a ration of 60 per cent grain, 40 per cent forage (dry basis), your grain must have 1.25 per cent $NaHCO_3$ to assure your total ration will contain 0.75 per cent. The action of the buffer is to decrease rumen acidity, thereby correcting the fermentation in the rumen, improve fibre digestion, and relieve (or partially relieve) the fat depression and replace $NaHCO_3$ lost due to less saliva flow.

What if your cows do not show a butterfat depression? Are there any other benefits or effects of feeding $NaHCO_3$? How do you feed $NaHCO_3$ if you offer cows a conventional ration (forage and grain fed separately), and how does this compare with $NaHCO_3$ in a complete ration (total mixed ration)? These were the questions we asked ourselves and began an extensive research trial at the Macdonald College Farm to answer the questions. We know that high producing cows in early lactation consume a large quantity of grain in a relatively short period of time. Even though a butterfat

depression may not occur, when this grain enters the rumen it is fermented rapidly and may cause a temporary increase in rumen acidity (as opposed to a permanent increased acidity with a butterfat depression). This temporary acidity can, theoretically, increase the risks of cows going off-feed (anorexia), interrupt forage fibre digestion while the acidity is present, and thereby increase the risks of metabolic diseases and decrease feed efficiency.

In our research trial 30 Holstein cows received identical forage and grain rations fed separately. Ten cows did not receive $NaHCO_3$, 10 cows received $NaHCO_3$ in the forage portion of the diet, and 10 cows received $NaHCO_3$ in the grain portion of the diet. The $NaHCO_3$ was included to assure the total ration dry matter contained 0.75 per cent $NaHCO_3$. An additional 10 cows were fed a total mixed ration with $NaHCO_3$ at 0.75 per cent of the dry matter for comparison.

The results were quite remarkable and are shown in Table 1. None of the rations produced a milk fat depression. The cows fed $NaHCO_3$ in the grain consumed more grain and produced more milk than any other of the conventional diets, and cows did equally as well as those fed the total mixed diets. The cows fed $NaHCO_3$ in the forage produced the least milk per kg of grain while all other diets were equally efficient. However, those cows fed $NaHCO_3$ in grain and the total mixed diet were slightly more efficient than the cows fed no $NaHCO_3$. Additionally, rumen acidity was lowest (pH high) when $NaHCO_3$ was in the grain. Of extreme interest is the result showing that the incidence of cows going off-feed was low when $NaHCO_3$ was in the grain and total mixed ration and that when no $NaHCO_3$ was fed the incidence of ketosis increased.

These results have led us to conclude that $NaHCO_3$ can do more than alleviate a butterfat depression. High producing cows in early lactation consume high quantities of grain needed for milk production but that can cause digestive problems. By including $NaHCO_3$ in the grain for these cows feed intake can increase, resulting in more milk produced and, at the same time, the risks of digestive upsets can be reduced. Again the point must be emphasized that if you use $NaHCO_3$, the total ration dry matter must contain 0.75 per cent $NaHCO_3$.

Table 1. Results of research trial feeding $NaHCO_3$ to cows in early lactation when no butterfat depression is occurring

	Conventional-type Diets[1,2]			
	Forage + grain Control (no added $NaHCO_3$	Forage with $NaHCO_3$ + grain	Forage + grain with $NaHCO_3$	Total mixed ration + $NaHCO_3$ (60% forage + 40% grain)
Dry matter intake (% of body weight):				
Grain	1.3	1.4	1.4	1.3
Forage	1.7	1.6	1.8	2.0
Total	3.0^{a}	3.0^{a}	3.2^{b}	3.3^{b}
Milk (kg/day)	33.0^{a}	31.4^{b}	34.8^{c}	33.9^{ab}
4% FCM (kg/day)	31.9^{a}	30.5^{b}	33.8^{c}	32.4^{a}
Milk fat (%)	3.8	3.9	3.8	3.7
Milk: grain ratio[3]	4.07^{a}	3.69^{b}	4.19^{a}	4.21^{a}
Rumen pH[4]	6.57^{a}	6.62^{ac}	6.84^{b}	6.77^{ac}
Cows off-feed (%)[5]	30	50	0	10
Cows with ketosis (%)	20	0	10	0

[1]Forage and grain fed separately free choice.
[2]All rations except controls had $NaHCO_3$ at 0.75% of ration DM.
[3]Calculated as kg FCM/kg grain.
[4]pH indicates acidity. Low pH values means high acidity.
[5]Feed consumption reduced by 50% for less than 5 days.
[abc]Values in the same row with different letters are statistically different.

JOHN McCAIG (1923-1984)

John was born at Ormstown on May 9, 1923, one of 10 children of Robert McCaig and Georgina Milne. He died on November 16, 1984, and is survived by his wife Eleanor Barrie, a daughter JoAnn (Mrs. Murray McClintock) and a granddaughter Stacey, all living in or near Ormstown.

John was a livestock man, who spent 40 years working closely with purebred dairy cattle. After graduating BSc (Agr) from Macdonald College in 1944, he was Federal Fieldman in charge of Calf Clubs in the Eastern Townships and western Quebec. He was on the Board of the Ormstown Exhibition in charge of 4-H until just a few years ago.

In 1948 he was appointed Chief Inspector with the Advanced Registry Board covering all Canada. A few years later he was in charge of starting up a joint classification system for the Ayrshire, Guernsey, Jersey, and Brown Swiss Associations. He classified for these breeds all across Canada until 1975, when he was appointed Secretary Manager of the Canadian Ayrshire Breeders Association and Editor of the Ayrshire Review.

John McCaig died after supervising the Ayrshire Show and Sale of Stars at the Royal Winter Fair in Toronto. This was one of his favourite shows, not having missed one since 1946. He judged Ayrshire, Jersey, and Guernsey exhibits here at five different times.

He judged at most major shows in Canada and many in the United States, also the National Show in Scotland and England. A few years ago he gave a paper on the future of the dairy cow and how the Ayrshire breed could fit into this at a World Conference in England.

John was a great promoter. He toured Finland, Sweden, Scotland, England, Australia, New Zealand, and all over North America creating markets for Ayrshire cattle and semen, or just trying to improve the breed there or in Canada.

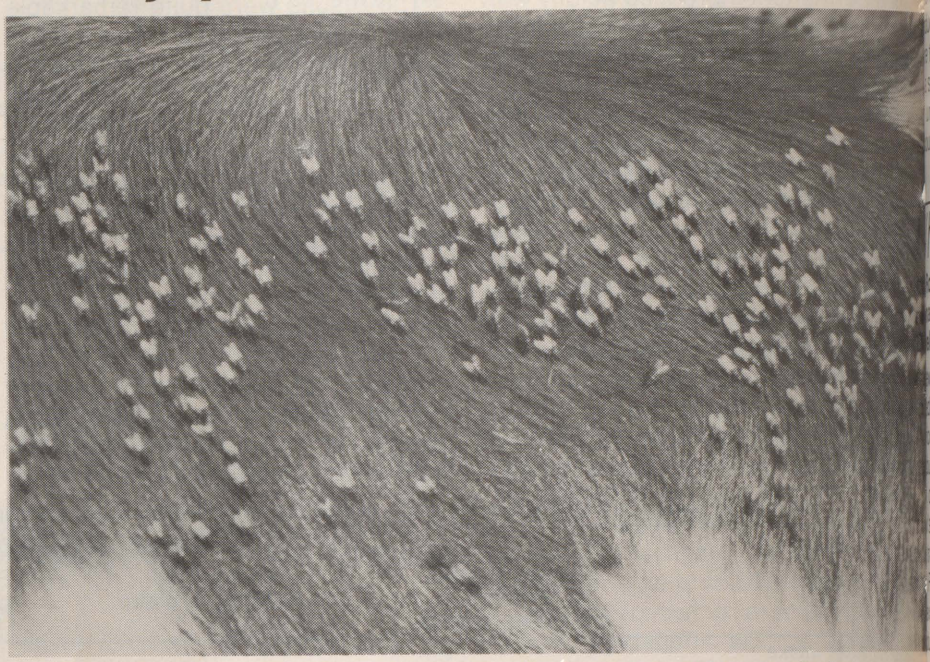
Last month (October) while in Kenya, Africa, he was named Secretary of the World Ayrshire Association. He arrived home just before the Royal in Toronto.

John was a leader; young people in 4-H and members in livestock associations looked up to him He worked very hard and was always capable of achieving results. This is why he will be missed by many in the cattle industry as well as by his family and friends.

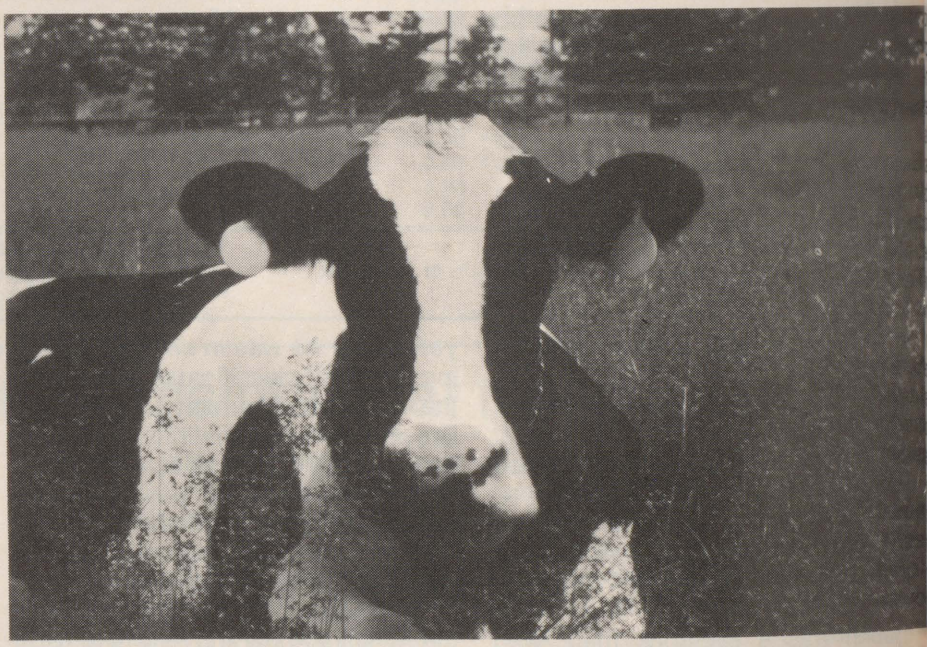
(Reprinted from *The Gleaner*, November 28, 1984)

Flies are bothersome but do they affect dairy performance?

by Professor Elliott Block
Department of Animal Science
and Professor David J. Lewis
Department of Entomology



Of all biting flies, the horn fly, above, is one of our biggest problems; below, to obtain full benefit from insecticidal ear tags, each ear of each cow should be tagged.



Most of you realize that the summer fly population on farms is annoying to both labour and cows. When the fly population becomes large we find that cattle become increasingly nervous, switching their tails, stomping their feet, and generally increasing their voluntary activity. From a purely humane point of view it would seem that the control of flies on pastured cattle is warranted. However, we must also realize that farming is a business and, like other business decisions, we want to realize a dollar return for any investment including fly control.

The horn fly is our biggest problem in southern Quebec and throughout the St. Lawrence and Ottawa Valleys. This fly bites and draws blood from cattle creating an uncomfortable situation. The horn fly is mainly present outdoors; therefore, it is not a predominating force in the barn where the house and stable flies predominate. Although the house and stable flies are bothersome, they are not considered to be of great economic importance. In fact, considering the amount of time cows actually spend in the barn during summer, controlling the house and stable flies probably has more benefit on the well being of farm labour than of cows.

Fly control, from an economic standpoint, must take the above facts into consideration. In most dairy systems the summer grazing period represents a time when heifers are out-of-doors continually and lactating cows are out-of-doors 60 to 70 per cent of each day. Controlling flies in the barn by electrocution or fogging methods, therefore, will create a better working environment; however, fly control for cattle must be aimed at the outdoor fly population to realize an economic benefit. Dusting or oiling can be effective but requires cows to exit and enter the barn through a specific door, can be cumbersome and messy, and does not treat heifers or other animals that do not enter the barn on a daily basis.

The use of ear tags impregnated with an insecticide appears to be the best solution at present to the above problems. We conducted tests at Macdonald College evaluating the effectiveness of using insecticidal ear tags on heifers. The evaluation was simple in that we had heifers on separate pastures; heifers on one pasture had one tag in each ear while heifers on the second pasture had no ear tags. Once each week flies were counted on one side of the body and the entire face and head of 10 animals from each pasture. The study commenced 31 May, 1984, and terminated 5 September, 1984.

The horn fly accounted for 97 per cent of all flies counted and the ear tags caused a 99.6 per cent reduction of horn flies on the tagged heifers. Because we were only evaluating the effectiveness of this ear tag (Pay-Off, Cyanamid Canada, Inc.) no animal performance data were obtained.

We conducted a second trial to evaluate the effectiveness of the Bovald ear tag (CIBA-GEIGY Canada, Limited) on lactating dairy cows and to observe if fly control affected milk production. As in the heifer trial, cows were tagged in each ear and housed on a separate pasture and compared to untagged cows. Horn flies accounted for 85.2 per cent of all flies counted and the ear tags caused a 99.9 per cent reduction in horn flies. For the 111 days of the trial the tagged cows produced 117.7 kg more milk per cow that the untagged cattle (1.06 kg/day more milk). This would translate into an added income of $49.43 per cow, assuming a milk price of $42/hectolitre, which more than covers the cost of the ear tags.

We have concluded that there is an economic benefit to controlling flies on cattle using insecticidal ear tags. However, to obtain the full benefit we recommend that you use tags properly; one tag in each ear. If you place one tag on each animal and tag every other animal, you may not obtain maximal reduction of flies or obtain any economic benefit.

What's New in Cow Indexing?

by Robert Moore
Manager of Planning and Development, DHAS

A new round of cow indexes was computed in August of 1984. Early in 1985, Agriculture Canada will again be producing cow index reports.

A cow index is an estimate of the cow's genetic transmitting ability for the trait in question (*Macdonald Journal*, February 1984). Currently, these indexes are computed for milk and fat production for cows enrolled on an official milk recording program. They estimate how much better or poorer the offspring of a cow are expected to be compared to contemporaries.

A new feature that has been added is the publishing of a percentile ranking along with each milk and fat index. Because the cow indexes are calculated against the same base as bull proofs, the average value for each breed is usually different from zero. Their percentile ranking is a measure of where a cow stands in relation to all the other active cows of her breed. Specifically, it indicates the percentage of the cow population that ranks below a cow for the trait under consideration.

For example, a cow with a percentile ranking of 95 for milk yields has an estimated genetic transmitting ability for milk that is better than 95 per cent of the active cows in the breed. She is in the top five per cent of her breed. A percentile rank of 20 would mean that the cow has an index value that is better than 20 per cent of the active cows. However, there are thus 80 per cent of the cows with a higher index than this cow. The actual index values for milk that correspond to different percentile rank groups for four different breeds of dairy cattle are shown in Table 1. Note, however, that there are 100 classes into which cows are divided (0 to 99).

Table 1. Range of cow indexes for different breeds by percentile rank groupings for *milk production* (1984)

Percentile Rank Group	Ayrshire (Indexes)	Guernsey (Indexes)	Holstein (Indexes	Jersey (Indexes)
95–99	9.8 to 24.2	6.8 to 16.8	5.6 to 20.6	7.1 to 18.4
90–95	8.4 to 9.8	5.2 to 6.8	4.0 to 5.6	5.4 to 7.1
80–89	6.7 to 8.4	3.4 to 5.2	2.2 to 4.0	3.2 to 5.4
70–79	5.6 to 6.7	2.2 to 3.4	1.0 to 2.2	1.5 to 3.2
60–69	4.6 to 5.6	1.1 to 2.2	0.0 to 1.0	0.3 to 1.5
50–59	3.7 to 4.6	0.1 to 1.1	– 0.9 to 0.0	– 0.7 to 0.3
40–49	2.8 to 3.7	– 0.8 to 0.1	– 1.8 to –0.9	– 1.8 to – 0.7
30–39	1.7 to 2.8	– 1.9 to –0.8	– 2.7 to –1.8	– 3.0 to – 1.8
20–29	0.5 to 1.7	– 3.2 to –1.9	– 3.8 to –2.7	– 4.3 to – 3.0
10–19	– 1.1 to 0.5	– 4.9 to –3.2	– 5.4 to –3.8	– 6.2 to – 4.3
01–09	– 5.5 to –1.1	– 8.6 to –4.9	– 9.5 to –5.4	–11.4 to – 6.2
0	–22.0 to –5.5	–13.2 to –8.6	–22.2 to –9.5	–20.0 to –11.4

There is less good soil in Quebec than we thought!

In my article on soil degradation in Quebec which appeared in the August, 1984 issue of the Macdonald Journal, I presented a table which purported to show how limited our agricultural soil base really was. A reader called wondering where all 60,000 ha of Class 1 soil were. After two days of checking, we discovered that in the publication from which these figures came 46,000 ha of these top-quality soils had been erroneously located in the Gaspé area. Not exactly your typical banana country! Upon further checking, we found that two columns of numbers had been transposed in the original publication. Table 1 of my article should therefore be replaced by the Table appearing below. These revised data do not change in any way the conclusions I drew from Table 1; on the contrary, they are reinforced. I would like to thank Dr. C. De Kimpe of the Agriculture Canada Research Station at Ste. Foy for his astuteness in spotting this anomaly and apologize to our readers for the error.

Table 1. Capability classes for agriculture in southern Quebec

Class		Area	Area
		10^3 ha	%
1		14	0.0
2		1000	3.1
3		1400	4.3
4		2800	8.7
5		1600	5.0
6		9	0.0
7		21600	67.0
0	organic soils	1250	3.9
	water	2500	7.8
	urban areas	60	0.2
Total		32233	100.0

Source: Lajoie, P.G. 1975. Agricultural lands in southern Quebec: Distribution, extent, and quality. Agriculture Canada Publ. No. 1556 (amended).

Professor Guy Mehuys
Soil and Land Resources Section
Department of Renewable Resources

Paying for protein in milk is important for the future of the dairy industry

by Dr. John Moxley
Director, DHAS

For over a century fat content has been the measure of quality of milk. As recently as 1967 half of the farms producing milk in Canada separated the milk and sold cream for butter production. The skim milk was kept on the farm to feed livestock. Quebec has made the most rapid change of the provinces, and today nearly all Quebec dairy farmers ship whole milk.

Consumers' needs, lifestyles, and desires have changed. The demand for fat in foods has declined. In the past, dairymen appreciated the value of the protein, minerals, and vitamins of skim milk and considered it essential for the successful raising of young livestock. Perhaps the best illustration of the value of milk for growth and health is the change in height of the postwar generation of Japanese. Skim milk in school lunches was an important factor in this change. Over the past 25 years the Japanese dairy cattle population has tripled, and milk production quadrupled to meet domestic needs.

In Canada the pattern of consumption of milk and milk products is changing. Cheese consumption had doubled over the past 20 years. Today 25 per cent of the milk supply goes into cheese production.

In the past fluid milk was entirely whole milk. Today 60 percent of the fluid milk sales is 2-per cent fat milk. The proportion of 2-per cent fat milk is steadily rising, and the price differential between whole milk and 2-per cent fat milk is small. In the United States a number of areas are successfully marketing 2-per cent fat milk fortified with additional milk solids-not-fat. While yogurt production currently utilizes less than one per cent of the total milk production, consumption has increased fourfold in the last 15 years. These changes in consumption habits reflect the consumers' increasing appreciation of the importance of the protein, mineral, and vitamin content of milk.

In spite of these changes in the market place the Canadian milk producer is still paid on the basis of volume and fat content. Nearly all of the western European countries now have a milk pricing system based on the fat and protein content of milk. The Netherlands was one of the first countries to change to a milk pricing system which included both fat and protein. Currently fat and protein are paid for at an equal ratio. Norway pays nearly twice as much for protein as it does for fat. The English milk marketing board initiated a new payment system in 1984 which puts milk fat, protein, and lactose in a pricing ratio of £1.81:1.77:0.27 per kilogram respectively.

It would appear that a pricing system should consider milk composition independent of the bacteriological quality of milk. High bacteria counts are due to using milking equipment not properly cleaned, improper washing of udders before milking, and mastitis infections of udders. These represent individual herd problems which need correcting. Quebec dairymen have made excellent progress in this area, particularly since the introduction of somatic cell counts as a measure of udder health.

Why should we be concerned about our present milk pricing system? Quite naturally dairymen plan their breeding and herd management program to fit the milk pricing system. Dairymen are not paid to produce protein so it is ignored in the breeding program. Studies of the genetic changes in dairy cattle in Quebec over the past 15 years indicate that the genetic potential for protein content has declined. This has been counteracted by an improvement in dairy cattle feeding which has favoured the increase of protein content.

There are two ways in which the protein content of milk can be improved. These are through improved dairy cattle nutrition and selection of breeding stock. In 1983 there were 6,206 Holstein dairy herds with a full year of production on Quebec Dairy Herd Analysis Service (DHAS). The milk composition by level of production is indicated in Table 1. This Table indicates that the dairymen with the higher production levels, mainly due to better feeding and management, produced milk slightly lower in fat and higher in protein. The same applies if you examine the population of Ayrshire herds. On our present payment system these higher producing herds receive a lower price per hectolitre for their milk but ship a better quality of product which is also expected to result in a higher yield of cheese than the milk coming from the lower producing herds.

Making significant genetic changes in the kind of milk that our cows produce requires an incentive and planning. Research has indicated that the amount and quality of protein can be improved by selection. Sires and dams that can transmit the best genotype for better quality and yield of cheese can be identified. If appropriate steps were taken, it would appear that the protein content of our Holsteins could be increased from say 3.15 to 3.35 per cent in a period of five to seven years without sacrificing gains being achieved in other traits. The extra cheese produced from the higher protein in milk would be worth a minimum of an extra $1.25 per hectolitre of milk. The quality of fluid milk and skim milk powder would also be enhanced.

The Canadian dairy industry is in a situation similar to the one the car manufacturing industry faced in the 1970s. The industry needs to adapt to a changing market. This requires that the milk producer and processor cooperate and establish a milk pricing policy that is mutually beneficial to both and the future of the dairy industry.

Table 1. Milk composition by herd level of production in Quebec DHAS Holsteins in 1983

Production Level/Cow	Cow Average	No. of Herds	Milk Composition	
			Fat %	Protein %
Less than 5,000 kg	4,484 kg	1,256	3.53	3.06
5,000–5,999 kg	5,528 kg	2,560	3.54	3.10
6,000–6,999 kg	6,419 kg	1,900	3.54	3.13
7,000–7,999 kg	7,352 kg	445	3.51	3.16
8,000 +	8,340 kg	45	3.49	3.18

Seeking Solutions

Several Faculty members received support recently from the Natural Sciences and Engineering Research Council (NSERC) for Strategic grants. Strategic grants must satisfy NSERC's requirements of good basic science and, in addition, have economic benefit to the community.

PROFESSOR A.F. MacKENZIE of the Department of Renewable Resources will purchase equipment designed to automate output from two Technicon Autoanalyzer systems using a chromatographic integrator and (what else!) a personal computer. This should help research output by freeing students and technicians from the tedium of reading charts manually.

One project that this equipment will help is the maximum corn yield experiment, carried out by graduate student Michel Remillard in the Department of Renewable Resources. Michel's maximum yields were 194 bushels per acre (12.2 tonnes per hectare). These yields were obtained with a plant population of 90,000 plants per hectare (in 15-inch rows), a high fertilizer rate (400 kg N, 300 kg P_2O_5, 400 kg K_2O), and supplemental irrigation. Next highest yields were 176 bushels per acre, again with a high population, but normal fertilizer rate (170 N, 100 P_2O_5, 170 K_2O) and no irrigation.

These yields are about double the provincial average. However, yields are expected to be higher next year, as a new precision planter has been bought, and better plant distribution and lower soil compaction should result in better yields.

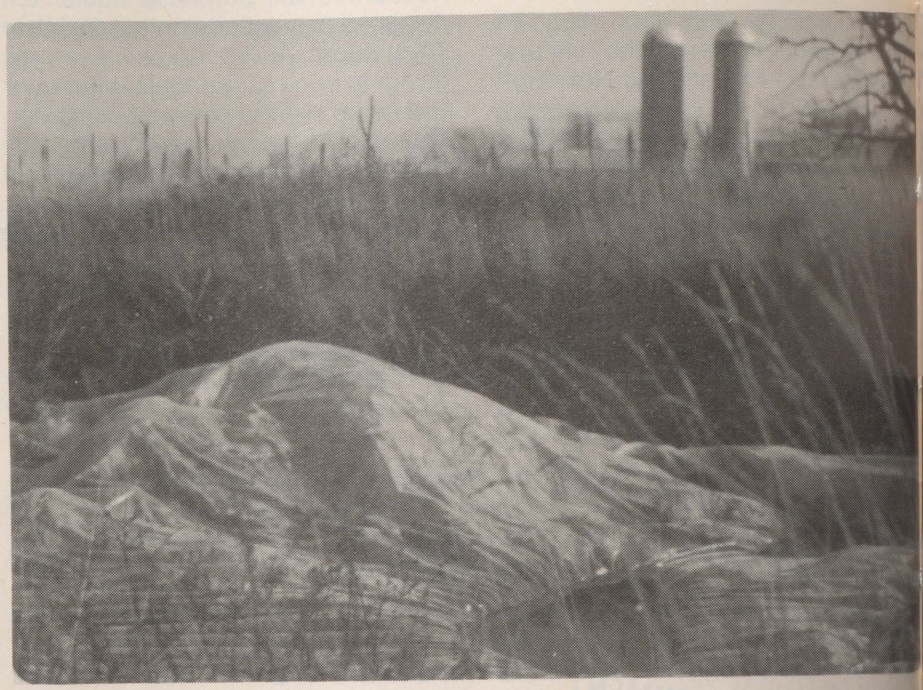
PROFESSOR ROGER BUCKLAND of the Department of Animal Science has received a grant to study seminal proteins and their role in improving the fertility of frozen-thawed chicken semen.

PROFESSOR BRUCE DOWNEY of the Department of Animal Science has received NSERC funding to study the mechanisms controlling ovarian function in pigs. While outside influences such as age, body weight, breed, nutritional status, and photoperiod are important to the success of a reproductive management system, a fundamental knowledge of endocrine events within the animal forms the basis upon which all other factors can be manipulated,. By determining the roles played by estrogen, progesterone and, particularly, the prostaglandins in events leading to ovulation, Professor Downey hopes to add significant new knowledge to our understanding of reproductive patterns in both prepuberal and sexually mature gilts. As an added bonus, this basic research may enable other researchers, veterinarians, and producers to use the information for preventative and therapeutic treatment of reproductive disorders. This work is being carried out in collaboration with Dr. Louis Ainsworth, Animal Research Centre, Ottawa, and Dr. Ben Tsang, University of Ottawa.

Manure Storage Facilities

The Case for Earthen Structures

by Suzelle Barrington*



An experimental sand reservoir — one of four earthen reservoirs that were built for research purposes.

Through its Environmental Protection Agency and, later on, its Ministry of Environment, the Quebec government has been requiring proper manure storage facilities for all agricultural operations expanding or establishing their herd of livestock. This requirement followed from the Environmental Protection Law of January 1972, which was enforced from 1972 to 1983 through a series of draft Bylaws and the final Bylaw of 1980. These Bylaws defined as proper any manure storage facility which could first, store all manure, bedding, and urine produced by the herd or flock over a minimum 200-day period; second, store all seepages from the manure once outside; and third, be leak proof. These Bylaws further defined "leak proof" as any structure demonstrating leakage characteristics similar to those of a properly built and steel reinforced concrete structure. To demonstrate such characteristics similar to concrete, earthen structures had to be built of soil of hydraulic conductivity of the order of 10^{-7} cm/s (3.5 cm or 1.5 inches per year). Because soils of such conductivity are extremely scarce in Quebec, concrete became the predominantly required building material. Most agricultural operators subjected to this Law and Bylaw were young farmers establishing themselves. Furthermore, concrete structures for manure storage require considerable capital investment — establishing young farmers have little if any money to spare. Thus, of all environmental permits emitted from 1972 to 1983, only five per cent more or less, had been respected.

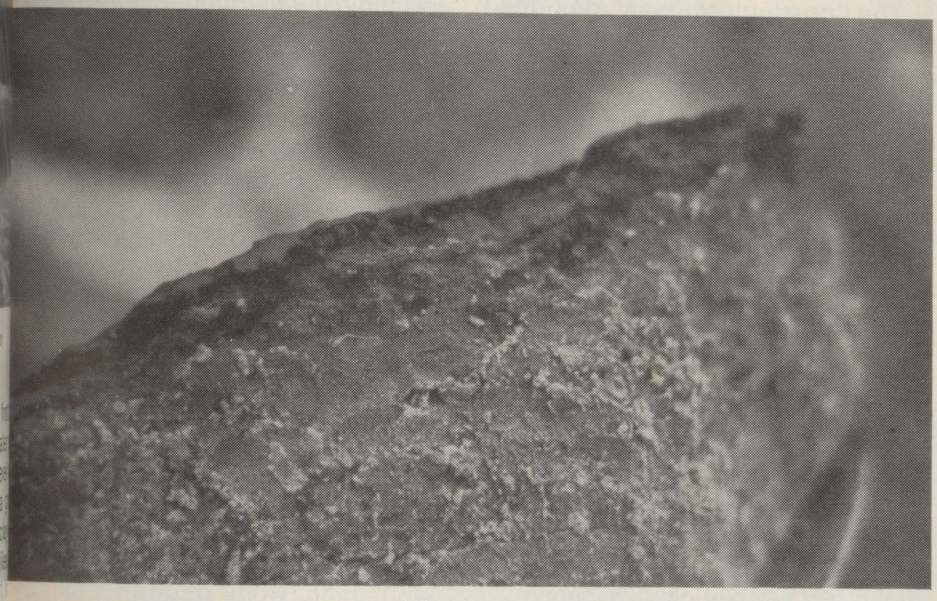
The research project undertaken in 1980 by the Agricultural Engineering Department of Macdonald College of McGill University had the basic purposes of studying the pollution hazards of using earthen structures for the storage of manure and of developing construction guidelines which would enable the construction of these structures in most of the soils of Quebec. The American, British Columbian, Ontario, and Maritime experience demonstrated that these earthen structures required from one half to one tenth of the capital investment required by concrete structures.

These earthen structures could, therefore, offer an affordable solution to the Quebec manure storage problem if proved acceptable to the Quebec Ministry of Environment. The Ontario Ministry of Environment reported having reduced by 95 per cent its winter manure spreading, its direct manure emission into water courses, and its manure spills from undersized concrete reservoirs from 1978 to 1980, simply by allowing farmers to build earthen structures.

The Macdonald College project first tested the soil sealing efficiency of manure under our Quebec climate, because temperature dependent sealing mechanisms (biological and chemical) were assumed as important as the physical mechanisms. For this test, four field reservoirs were built: they had a depth of 3 m (10 feet): the first three were built of clay, loam, and sand while the fourth one was built of 1.2 m (4 feet) of sand over clay: the first three reservoirs had a ground water table controlled at their bottom level while the fourth reservoir had a ground water controlled at the sand/clay interface. All reservoirs were filled with dairy manure in October 1981. Infiltration rates as well as neighbouring ground water quality were monitored from October 1981 to November 1982. The sealing was instantaneous. For example, the sand reservoir manure level dropped only 10 mm (1/2") during the first week of trial: filled with water, this same sand reservoir would have seeped itself dry within six hours. Thus physical sealing mechanisms rather than temperature dependent mechanisms were recognized as primary sealing processes. This was verified through laboratory work in 1983. Final infiltration rates of November 1982 were slightly but significantly lower than those of November 1981. But, for the entire 12-month trial, infiltration rates were the same for all four reservoirs despite their varied soil hydraulic conductivity. This clearly indicated that degree of soil sealing by manure was not related to the original soil hydraulic conductivity. Ground water monitoring during this 12-month

***Suzelle Barrington is at present a PhD student in the Department of Agricultural Engineering at Macdonald College and is also a Regional Engineer for the Quebec Ministry of Agriculture**

These photos, above and below, show the thickness of organic (manure) seal in the experimental sand reservoir.



trial provided very little information concerning reservoir pollution effects.

To further investigate ground water contamination hazards and measure with better accuracy the sealing effects, as well as processes, of manure on soils, several laboratory tests were performed from September 1982 to December 1983. This work provided information concerning the sealing mechanisms themselves. When a manure slurry starts infiltrating a soil, it must move through the voids between the soil particles. The suspended organic solids of the manure, of dimensions bigger than these voids, are left behind to accumulate at the soil surface and block the entry to these voids. Thus, the solids suspended in the manure slurry form the physical seal; this explains the speed at which the sealing can occur even under cold temperatures. Microorganisms intervene when temperatures exceed 10°C (50°F) by strengthening the physical seal. Chemical reactions can further occur within the soil from manure and microorganisms effects over a summer period to reduce the soil voids in number and size.

This laboratory work further demonstrated that manure could be stored in earthen reservoirs without serious pollution hazards as long as two basic requirements were met: first, the soil must demonstrate interparticle voids small enough to hold most of the manure organic matter at its surface, thus producing the optimum physical seal for seepages of the order of 5 to 15 cm (2 to 6 inches) annually; second, these seepages of 5 to 15 cm annually are highly polluted and must be cleaned before they reach the groundwater table.

The soil interparticle void dimensions can be calculated from the soil's particle size distribution and the soil's density, assuming no macro structure of the soil or large voids between soil aggregates. These large voids are generally destroyed by heavy equipment during the construction of the earthen reservoirs. Because sealing efficiency varies with manure type, soil physical characteristics required for dairy and hog manures, for example, are not the same. Under normal density, dairy manure requires a minimum clay content of five per cent while hog manure requires 15 per cent. Where these minimum requirements are not met (coarse sands for example), soil compaction can be used to reduce void sizes and insure just as efficient a seal. Where soil compaction is not sufficient to meet maximum void sizes (gravels, for example), a filter, similar to those used for subsurface drainage systems, could be used to line the soil so as to produce the same manure organic matter trapping effect. These filters or geotextiles are cheaper, stronger and could prove more effective than geomembranes used in previous projects. Geomembranes were found to come apart at their joints and to let manure liquids seep out. Furthermore, they tended to bulge upwards from the formation of gases from the soil under the reservoir.

Once the optimum seal is insured, manure liquids will still seep towards the ground water table at a rate of 5 to 15 cm per year. Where the soil is of high clay content, these liquids can be filtered and cleaned before they reach the gound water. But, in soils of low clay content, a drain system is recommended to collect these liquids and repump them into the earthen reservoir.

These recommendations were presented to the Quebec Ministry of Environment through the Quebec Ministry of Agriculture in 1983 and were accepted to their full extent, except that the Ministry of Environment has preferred to keep a few further conditions as safety factors.

One condition is that they require an extra drain around the bottom of a liquid storage reservoir which would collect the liquid seeping out, and this would be repumped back into the reservoir. This adds from $1,500 to $2,000 to the cost. Furthermore, the Ministry of the Environment required the hiring of a consulting firm which could possibly cost as much as the structure itself.

DIPLOMA CORNER

"New and Improved"

by Jim Currie
Assistant Director
Farm Practice
Diploma in Agriculture Program

Agriculture is probably the most dynamic industry in Canada. The history of man has been built on the changes he has made in the way he produces food.

As with virtually all other businesses, farming and all of agriculture has changed more in the past 50 years than in probably all the preceeding years. The past 10 years may have been the most disruptive. Not in great advances in new technology. Not in great discoveries in research. Our farmers are well educated in the ways and means of accepting and incorporating new discoveries into their operations. The change took place in the view of farming as a business.

Farmers discovered that the most valuable way to spend their time was sitting at a desk. Time spent there planning, recording, and analyzing made more profit than all the hours spent on a tractor seat or under a cow. Planning cut down on the time spent on menial chores and increased the effectiveness of that time. Analysis of results aided in developing new plans. Farm businessmen found out that profit was not a dirty word. Unfortunately, they also realized that loss was a reality during these same 10 years.

Any educational program that cannot or will not change with the time will not last. The Diploma Program at Macdonald College is almost 80 years old. For the first 60 years, there was little change. The program evolved with advances in farming. During the 1960s the family farm became the family business. The new generation became the borrowing generation. Inflation dictated "buy land now because tomorrow it will be worth more." Money was easily available and farmers were encouraged to borrow based on inflationary values. The farmers themselves had not had the training to understand the dangers of this attitude. In such good times it is doubtful that they would have resisted the "get bigger" temptation, anyway.

At the same time, the Diploma Program was having problems. It didn't stay ahead. It didn't evolve fast enough to keep up to the changes that were happening in the country. By the early 1970s it was obvious that there were only two choices left for the program: change (and fast) or become an educational passenger pigeon. In 1975 a "New" Diploma Program was announced. With funding from the Ministry of Agriculture the quantum leap forward was taken. Agricultural education was moved forward into the 1980s where it needed to be, 10 years ahead of the times.

The curriculum was designed around two major themes, business management and practical training. It is a credit to the Economics Department at Macdonald that today's students are well versed in planning and analysis procedures. On the other hand, established Quebec farmers rose to the challenge of teaching a new form of practical agriculture.

"Farm Practice," a form of practical internship, was probably the single biggest change in the new program. Because of it, other in-class improvements could be accomplished. Other subjects could be made more applicable, and inexperienced students were more able to understand why certain things were being taught. Other programs across the country were jealous of the fact that agriculture students in Quebec had this advantage. And, as an offshoot, students were guaranteed a summer job.

In the 10 years since the new program began the world of agriculture has changed. Inflation became a cruel taskmaster when it continued to effect input costs and failed to touch commodity values. Suddenly deflation of land prices and net farm income and reduced profit margins were the order of the day. Farmers, especially young farmers trying to get established in the industry, have had to face interest rates that topped 20 per cent. The short and long term credit, which had been the life blood for so many a decade ago, soon became their Nemesis. As a result of the easy credit and the change to high interest rates, some farmers were faced with the distinct possibility of bankruptcy and foreclosure. Very quickly the eagerness of the 60s became the doom and gloom of the 70s.

Through it all, however, the trained businessman showed that he had the best chance for survival. The Diploma Program graduates were some of the best prepared. The former occupants of this column might stand as evidence. Many took the challenge and entered the business right at the depth of this depressed era. With planning and close scrutiny of their business, they are proving that they can make it where others have failed.

The Canadian farm industry and indeed the Canadian population in general has now entered a period of conservativism. Not just in politics but in attitude. It seems like every moral and ethical value and, consequently, business value is being affected by this new outlook. Caution seems to be the guiding word in private as well as professional life. In reaction to this change in the industry the Diploma Program is changing.

We are pleased to announce the initiation of the next stage in our evolution. After 10 years of observation and evaluation we can make the changes that are necessary to keep our program, and our students, ahead of the changes in industry.

We believe that the trend toward the viewing of farming as a business and not a lifestyle will continue. This will result in the need for a stronger background in business management. Future farmers will require far more information from off-farm sources; therefore, they will need better communication skills. Finally, information gathering and analysis systems are changing and our graduates will need to know how to tap these new sources. To meet these requirements, this program will enter the computer age.

Past, well-proven principles must still be respected. There will continue to be a strong push on the practical side. One of the major successes of the present program is the farm practice component. Even this gem can be, and will be, improved. The existing farm practice can be criticized for being only a summer farm practice. The future program will include work periods on farms in the autumn and winter. Our graduates will soon know what it is like to pick corn in November or blow snow and thaw water bowls in February. These in-term work periods will be short — only two weeks each — while the summer apprenticeship will cover 12 weeks.

Another major change will be in the duration of the course. A fifth academic term is being added. There are great advantages to this evolution. In the past our graduating students have left the college in May to spend a second required summer on a farm. At the end of the summer they received a pass or fail evaluation of their work, with little feed back or discussion of what went on during the summer. In the new system they will have a final term to discuss their experience. They will also be able to incorporate that information into their farm project which will still form a major part of their final term evaluation.

The final and possibly most significant change will be in the number of options offered through the Diploma Program. Incoming students will have a choice of four concentrations. Plant oriented people will be offered more courses in either horticulture or field crop management, while animal lovers will choose from a dairy option or a meat production concentration. This should alleviate the criticism of those horticulture students who were forced to suffer through "milk & meat" subjects. All students will still do a common, generalized first-year program. Specialization will occur in the third, fourth, and fifth semesters. Students in all options will be offered a far greater range of complementary courses. They will select enough of these to round out their program to give them a complete education package.

THE PROGRAM: 5 semesters

4 Options:

Dairy Production
Meat Production
Horticultural Production
Cash Crop Production

19 Concentration Courses including

Soil Management
Crop Management
Livestock Management
Machinery Management
Farm Management

6 Farm Practice Sessions

12 Core Courses in Humanities, Language, and Physical Education

4 Complementary Courses

ALL CLASSES ARE GIVEN IN ENGLISH

The prospective Diploma student who does not expect to return to the farm also has a lot to gain from these new developments. The current standard certificate of technical training in Quebec is the "Diplôme d'Étude Collégial" (D.E.C.). The new program will be of sufficient length and incorporate all the required courses to allow us to grant a technical D.E.C. to our graduates. They will, therefore, be awarded both the provincial certificate and our own "Diploma in Agriculture, Macdonald College of McGill University" that is so well recognized throughout the agricultural industry.

All in all, the prospects for the future are very exciting and encouraging. After 10 years the "New Diploma Program" has evolved to the point where we can legitimately claim that famous advertising ploy "New and Improved."

It's always a pleasure to have the QFA members on the Mac campus. Familiar faces at this year's annual meeting in November included, top left, Margaret Brown, QFA office and Warren Grapes, QFA President presiding over the refreshments while Doug Smith samples the cheese. Our sympathies are extended to Warren whose wife died accidentally on December 18, 1984. Top right, Doug MacKinnon and John Brus discuss the day's activities while, below left, Malcolm Fraser and Gordon French, right, discuss farm topics with CBC Radio Noon's Marc Côté, centre. Below right, DHAS Manager Norm Campbell, second from left, catches up on QFA with, left to right, Benson Moffat, Doug Johnston, and Walter Hodgman.

Nesses at Macdonald: A Family Tradition

If you can count about 30 people in your family who have attended Macdonald College almost since day one in either the Teacher's, degree Agriculture, or Diploma program and add the fact that some of them have worked at Macdonald, then you have outdistanced the Ness family of Howick, Quebec, and we had better plan to feature your family in a future issue of the Macdonald Journal. Because of the Macdonald connection, because of the outstanding contribution this family has made and continues to make to agriculture and the community, and because this is our annual dairy issue and we want to share some of Bobby and Larry Ness's comments on their dairy operation with you, Dr. John Moxley, Director of the Dairy Herd Analysis Service (DHAS), and the editor of the Macdonald Journal visited with Bobby and Joan Ness, their son Larry, and Bobby's Uncle Doug at the Terrace Bank Farm last October. Doug Ness's clear memory and fascinating stories filled our tape recorder; choosing which to share with you in limited space was difficult. We enjoyed our visit and would like to thank the family, particularly Carole Ness-Tannahill, for their help with these articles. Thanks as well go to Mrs. Eva Ness and her son Bud for all their interest and assistance.

Alex Ness's Family

The first Ness to be connected with Macdonald College, and the one whose association lasted the longest (almost 50 years), was Alex, youngest of a family of 10, son of Robert Ness and his second wife Mary of Howick. As a great nephew remarked to John Moxley recently, it was undoubtedly his long connection with Macdonald that influenced so many other family members to come to the college. Over the years the Ness house on the campus was a home-away-from home to relatives attending college and they, as well as others from the Howick area, could count on a good Sunday dinner.

Alex graduated in 1912, the second graduating class, with a BSA degree and immediately joined the staff, an association which continued a lifetime. The only break was for military service from 1916 to 1919. An officer in the Canadian Army, he was wounded in France. From 1933 until his retirement in 1956 Alex Ness was department chairman and professor of Animal Husbandry. His work in the field throughout Canada with the various cattle breed associations and calf club programs was widely recognized. He was a member of the committee which originated type classification of Ayrshires and one of the original classifiers. He worked in a similar capacity with the Holstein-Friesian, Jersey, and Guernsey associations. He judged all breeds at leading Canadian exhibitions. Professor Ness was made a commander de l'Ordre du Mérite Agricole by the Province of Quebec in 1950, given honorary life membership in the breeders' associations, and served for many years as a director of the Royal Winter Fair.

Alex first helped bring recognition to Macdonald in his graduating year. Even though he was only eight years old in 1912, Doug remembers that Alex, Bill Gibson — "a young man working on the farm who father had brought over from Scotland with cattle and then paid his way through college" — another two named Ford and Robertson and with G.H.S. Barton as coach went to the Chicago World's Fair as a judging team and won the competition. "I remember because the telegram telling us that they had won came through at milking time." Barton was later to become Dean of Agriculture and subsequently Deputy Minister of Agriculture in Ottawa. Bill Gibson, who went on to become superintendent of the Experimental Farms at Indian Head, Sask., was but one of a number of men that R.R. Ness was instrumental in bringing over to Canada.

Alex married Eva Smith of Westmount in 1920 and their three sons were raised in homes on the Macdonald campus and were associated with the college in various ways in later years. Roy Campbell (Bud) graduated from the Teachers' course in 1940, although after his service with the R.C.A.F., he took his degree at Sir George Williams and later a Masters degree at McGill. He worked in industry for many years but returned to teaching for some years before his retirement in 1984. In talking with John Moxley recently, Bud reminisced about his many summers on the farm at Burnside, the cattle sales, and going on the show circuit with the cattle.

James Alexander (Trick) took a year at Macdonald prior to his wartime service with the army. Returning from overseas in 1946, he completed his degree in Commerce at McGill in 1948. He now lives in Brighton, Ontario, and works in the packaging field. Robert William (Bill) graduated in Agriculture in 1950 and has been employed in the pharmaceutical industry, living in Beaconsfield. Both Bud and Bill met their wives at Macdonald. Bud's wife Mary (nee Manson) took her MSc in Nutrition (1947) and Bill's wife Joyce (nee Miller) graduated from the Teacher's course in 1946.

The importance of higher education was not lost on Alex's eight grandchildren all of whom are college graduates, although their various interests in education, engineering, nursing, commerce, veterinary science, and law took them further afield to Queen's, U.N.B., Dalhousie, and the University of Toronto.

Professor Ness died in 1965, but Eva, now in her nineties lives comfortably in a seniors' residence in Westmount. Her keen mind supplied many of the facts, names and dates for this story. Her scrapbook with clippings (including many from the *Macdonald Journal* of years ago), pictures, and documents makes fascinating reading.

Earle Ness's Family

Alex Ness's older brother, Robert R., the first owner of Burnside, had four children, all boys — Earle, Bruce, Douglas, and Mitchell — and they all attended Macdonald. Doug Ness told us that Earle's education was interrupted by the first world war. "He started at Mac before the war began and then served overseas. We were hoping he would be back in time to go with the herd to the National Dairy Show at Columbus, Ohio, in '18 but he didn't and I went instead." Earle continued with the degree program and graduated BSA in '20. He bought the

Terrace Bank Farm some five miles from Burnside in 1920. His son Bobby joined him on the family farm after he completed his Diploma program in '48 and today he, in turn, farms with his son Larry, a "black sheep" in the family as he went to Kemptville. As a matter of fact, none of Bobby and Joan's (she took the Teacher's course in '51) children have gone through Macdonald though they have been closely connected with the college.

"Things seemed to be kind of unsettled at Macdonald at the time I was ready for college; there was talk of moving to McGill which I didn't think sounded like a good idea so I decided to go to Kemptville," Larry explained. "But," he continued, "I think they have made a lot of progress with the Diploma Course since."

He and his three sisters Pamela, Carole, and Linda all worked with the Young Farmers when they had offices at Macdonald and Pamela was Grand Champion Showman at the Livestock show in '76 when she was attending the John Abbott CEGEP which shares the Mac campus. Her father was the first Grand Champion in 1948. Carole Ness-Tannahill got her degree at Carleton but while working with 4-H out of the Macdonald office she did take one course at Macdonald and is at present working part-time for the college and

Bobby Ness was the first Grand Champion of the Macdonald Livestock Show held for the first time in 1948. His daughter, Pamela, was Grand Champion in 1976.

The Class of 1912's golden jubilee reunion was held from June 6 to 9, 1962. Standing, l to r, Alex Ness, Malcolm B. Davis, H. Beecher Durost, J.G. Robertson, J.M. Robinson, Carl Raymond, Emile Lods, L.V. Parent, and Bruce Flewelling. Seated, l to r, Mrs. Parent, Mrs. Durost, Mrs. Flewelling, Mrs. Ness, Mrs. Robertson, Mrs. Fiske. Mrs. Robinson, Mrs. Davis.

for the newspaper group AQREM whose central office is at Macdonald. Pamela redeemed herself by marrying a Mac Dip graduate Neil Richardson, Dip '80, and they are dairy farming (Ayrshires, of course) close by in Howick. And Larry is still single so one never knows!

Bobby Ness's brother and three of his four sisters all attended Macdonald and both he and brother Owen married Mac girls. Owen, BSc (Agr) '52, got his first job with Alcan and has been with that company ever since. He was in the U.K. office for several years and has just recently returned to the Montreal office. "After he graduated," Bobby recalled, "Owen went back to Macdonald to work with Dr. Crampton and through connections there got the job with Alcan. His wife Arlie (Graham) took the Home Economics degree and graduated the same year — '52."

One of the professors said recently that there always seemed to be a Ness at Macdonald. Actually, in some cases there were several Nesses either from the same family or they were cousins or soon-to-be Nesses all at the college at the same time! Bobby's sisters took the Teacher's course with Mildred going through in '41, Elva in '42, and Evelyn in '51, the same year as Bobby's wife Joan.

Bruce Ness's Family

Joan also remembers that Uncle Bruce's twin daughters Marjorie and Margaret Ann also were at Mac for the Teachers' course ('51) at the same time as she was. "The girls are not identical and they used to think that Margaret Ann and I were the twins. So I said that since everyone thought I was a Ness I thought it would be a good idea to become one."

Douglas Ness pointed out that all of his brother Bruce's, himself a BSA '22 graduate, children went through Macdonald. After Bruce graduated he went back home to farm before getting his own farm in 1928. Both sons Robert and Billy came to Macdonald for the Diploma program. Robert was Class of '48 and Billy graduated in '58 and they now own farms in the Howick area, though a trucking business is their main enterprise. They raise beef cattle, Ayrshire heifers, grain corn and crops for Green Giant and also buy and sell corn, grain, and so on. Robert married a Mac girl — Shirley Milne, Teacher's '47. We have already mentioned Bruce's twin daughters, one of whom married Murray Warnica, a Dip '51 grad.

Dr. John Moxley, standing left, Director of DHAS, discusses the dairy industry in general and Ayrshires in particular with, seated, Doug Ness, and l to r, Bobby, Joan, and Larry Ness.

Douglas Ness's Family

Doug Ness remembered that he took the winter (Dip) course when it was a one-year program in '23, and when they turned the program into two years, he came back and took it again — Dip '27. "My three children all went through Macdonald. The eldest, Eileen, graduated in Home Economics in 1952. She, unfortunately, lost her life in a car accident a few years later. Bernice took the Dip course and graduated in '53 and Rowland (Rollie) was a Dip '58. He returned to Burnside until it was sold in 1975. He's now a classifier for the Holstein Association (another 'black sheep' as John Moxley pointed out). He married a Mac grad, Ruthie Mack, who took the Teachers' course."

Mitchell Ness's Family

Which brings us to the youngest of Doug Ness's brothers, Mitchell, who also took the Diploma course — Dip '31. Unlike his brothers, he married a Mac girl, Ruth, who took the Teacher's course in '36. Only one of their children, Andy, who is now in charge of a large bull unit in British Columbia, came to Macdonald. He was in the Dip class of '69.

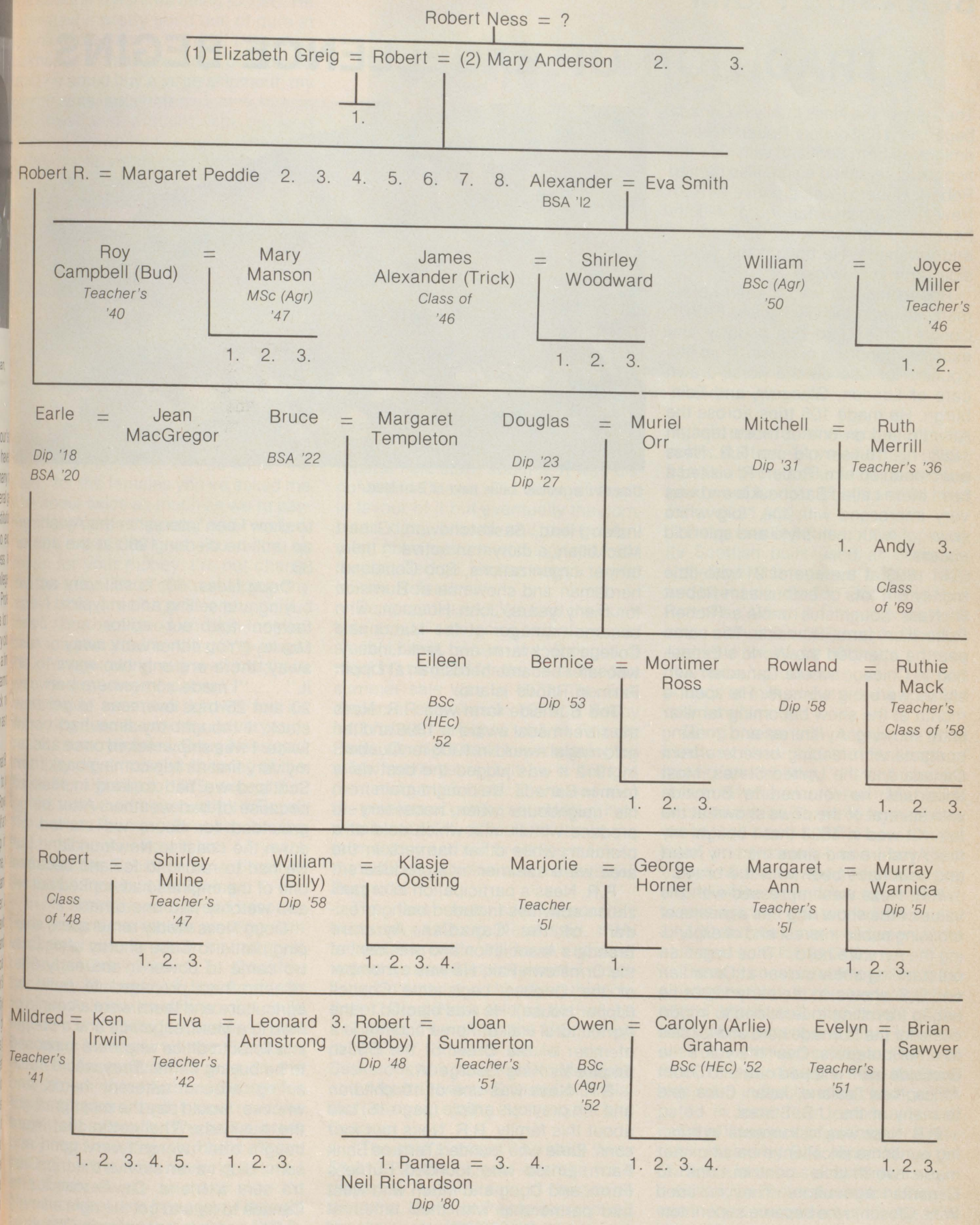
Doug and his brother Mitch became partners with their father on the Burnside Farm.

Macdonald is about an hour's drive from Howick but there must have been some other reason for so many members of one family over several generations to come to this institution to study. Bobby Ness tried to explain: "For a long time the Ness family thought that Macdonald College was part of them. The fact that Professor Ness was there had quite a lot to do with it because we were very close to him. We've been back many a time for the Livestock Show and for farm days, although when we go back now it seems we don't know nearly as many people as we once did."

John Moxley pointed out that Bobby Ness has often been back to judge Livestock Shows during the Royal and that Doug Ness, who is himself a member of the illustrious group in the Agricultural Hall of Fame, was instrumental in having Sir William Macdonald installed as a member. Doug Ness remembers the late David and Mrs. Lilian Stewart and Dean and Mrs. L.E. Loyd attending the special banquet the evening the portrait of Sir William was hung. "I was one of five people who got the Hall of Fame going a good many years ago and was on the Board until last year," Doug Ness said.

There are more generations of Nesses coming along and it is to be hoped that some of them will decide to further their education at Macdonald. The connection between the Ness family and Macdonald has been a long and close one: one we at Mac wouldn't want to see broken.

NESSES AND MACDONALD COLLEGE



BURNSIDE FARM

A TRADITION OF EXCELLENCE BEGINS

The story of the Ness family in Canada began in 1852 when Robert Ness I emigrated from Scotland with his wife, two daughters, and a son, also named Robert. Robert I was a native of Renfrewshire and had farmed at Aitkenheid. His interests were Clydesdales and Ayrshires. He bought the Woodside farm in Howick.

Robert his son was a keen horseman. He imported Clydes and French Coach horses into this country and exported hundreds of horses from this country for use on the horse-drawn cars of London, Glasgow, and Edinburgh. He made 105 trips across the Atlantic and on one of those trips, in 1888, his 16-year-old son R.R. Ness accompanied him. Robert R. visited a farm there called Barcheskie and was very impressed with the "big white cows . . . with their style and splendid udders."

In 1893 at the age of 21 with little money but lots of enthusiasm Robert R. Ness bought his uncle's (Robert Robertson) farm, Burnside. The same year he attended the World's Exposition in Chicago where Canadian Ayrshires were big winners. He spent a month at the show becoming familiar with showing Ayrshires and making contacts with leading breeders from Canada and the United States. Most important, he returned to Burnside with several of the cows shown at the fair. "It was in 1893 that I bought my first Ayrshire and since then my heart and soul have been with the breed."

R.R. Ness was impressed with the value of the show ring "as a means of arousing public interest and of expanding the Ayrshire herd." Thus began an outstanding show career at Canadian and U.S. shows. In the early 1900s he began travelling to Scotland to import cattle for the Burnside herd and for sale to other breeders. Over the years the Burnside farm shipped cattle to South Africa, New Zealand, Japan, Cuba, and to many of the U.S. States.

R.R. Ness was instrumental in bringing out some excellent men who later made worthwhile contributions to Canadian agriculture. They included W.H. Gibson, who became superintendent of the Experimental Farm at Indian Head, Saskatchewan, Gilbert MacMillan, a dairyman active in dairy farmer organizations, Bob Copeland, herdsman and showman at Burnside for many years, John Houston, who became manager of the Macdonald College stock farm, and Jack Lindsay, who later became herdsman at Lippitt Farm in Rhode Island.

One of the annual sales held at Burnside.

The Burnside farm won R.R. Ness the silver medal award in 1896 and the gold medal award in 1906 for Quebec. In 1912 it was judged the best dairy farm in Canada. He bought grain from his neighbours when necessary to produce winter milk which sold at a premium while other farmers in the area were summer milk producers.

R.R. Ness's participation in organization activities included being president of the Canadian Ayrshire Breeders Association and president of the Ormstown Fair. He was a member of the Quebec Legislative Council (Upper House). He was elected to the Agricultural Hall of Fame and made a member of the Order of the British Empire by King George VI.

R.R. Ness was one of 10 children and the previous article (page 16) told about this family. R.R. Ness had four sons: Earle who founded Terrace Bank Farm, Bruce who founded Burness Farm, and Doug and Mitch who went into partnership with their father at Burnside and Woodside. He continued to show keen interest in the Ayrshires up until he died in 1960 at the age of 88.

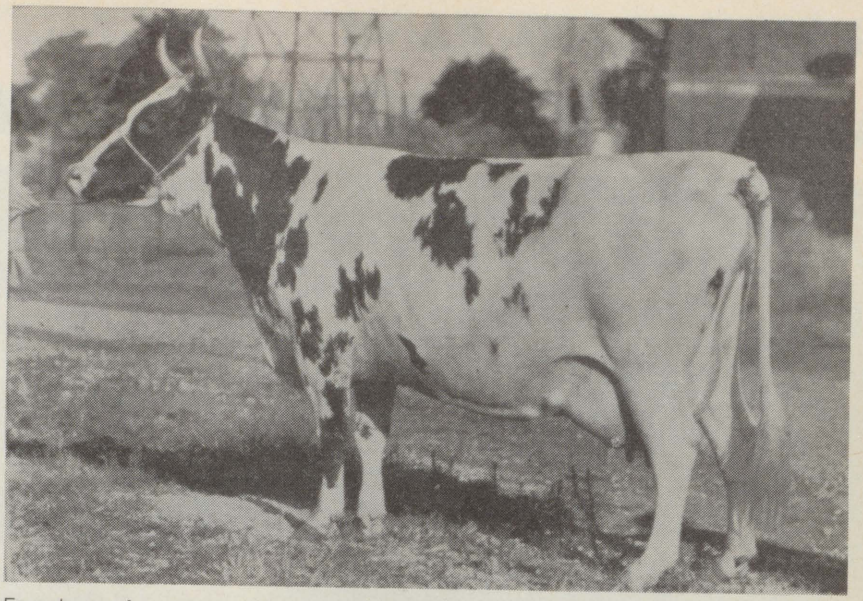
Doug Ness, 80, is still very active buying and selling and in typical Ness fashion told our editor and John Moxley "You either work away or rust away; there are only two ways to do it." . . . "I made somewhere between 20 and 25 trips overseas to get new stock. I thought my time had come twice. I was shipwrecked once and on my very first air trip coming back from Scotland we had to land in Iceland because of bad weather. After being grounded for hours we started off down the coast to Newfoundland but we had to return to Iceland because one of the engines had conked out — and we only had one other!"

Doug Ness vividly remembers shipping cattle to Cuba shortly after Castro came to power in the early 60s. "Castro had promised to build up agriculture and there were a couple of men in a Montreal office and a couple in a Toronto office who were supposed to be buying cattle. They would make a trip around different herds and whoever would pay the most graft got the business. The cattle that were bought often weren't very good and some didn't even survive the trip. Castro sent a friend, Dr. Fernandez to Canada to try and get the right animals and fortunately he landed in Ottawa at

the time of the Ottawa Winter Fair and he saw the Ayrshires being judged. He also saw a pretty good bull of ours at a unit and when he asked if there was someone with a knowledge of cattle so that he could buy a large shipment, my name was suggested. I met him in Montreal and brought him out and showed him about five herds. I had told the boys to wash their tails and just leave the door so I could get in and take the wife out shopping. I took him up home first and there was a nice little bull calf in the corner stall in the calf barn and he asked me what I wanted for him. I told him $1,500. He didn't say yea or nay. I showed him some more places and finally he'd seen enough and we went back to Montreal to talk business. He said 'if I give you a small order of 700 females to start with, what will you take for that bull calf?' 'Well,' I said, 'I might take $1,200 for it.' He said, 'that's one. Buy me three more bulls at $1,000 apiece. You know,' he said, 'for the females you've asked me just about twice as much as we're paying those other shippers,' and I replied, 'and I expect to give you twice as much for your money. I'm not changing the price, and I'm not shipping any cattle that aren't good enough. If I can't find them good enough for you, then maybe you're not going to get 700.' We got along very well and there was no greasing of palms!"

Burnside was well known for its show ring success and for its very successful summer sales. Doug Ness said that they never missed showing at the Royal Fair right up to 1975, except during the war when there wasn't a Royal. They won Premier Breeder at the Royal 10 times in their last 17 years and Premier Exhibitor nine times in the last 12 years of showing.

In his activities with breed associations Doug Ness recalls working with a couple of men for whom he had great respect. One was C.T. Conklin, Secretary-Manager of the American Ayrshire Association who no one could replace, and George Clemens, past Secretary-Manager of the Canadian Holstein Association. "I was on the breeds committee with old George for about 10 years, and I must say we fought occasionally. We had a great many night meetings, but he'd always call me up the next morning before I was rightly awake to make sure I'd have breakfast with him again. I brought back the idea for the present R.O.P. system from Scotland and told Frank Pewtress, who was responsible for the federal field staff, about it. It was discussed in Ottawa. Old George wasn't in favour of it but eventually the combined dairy breeds and the government got a system working, and I still respect George. He has done a terrific job for Holsteins."



Foundress of a great cow family — Burnside Blossom Andrietta.

Doug continued, "We kept the Burnside annual sale going with the occasional break when we thought it wouldn't be good for the herd. The last summer sale was in 1971. The final dispersal sale was in 1975. If Bobby hadn't been doing so well at Terrace Bank, we might have kept on going for a few more years, but he is doing a tremendous job here. There was also the problem of getting satisfactory help which made it difficult to leave the farm to buy and sell breeding stock so the difficult decision was made to sell Burnside."

The farm was sold separately because as Doug Ness said, "We believe the cattle will have a greater impact on breed improvement if established in other good herds on the continent. Doug Ness told us that of the 147 head, 14 went to the U.S., seven to Prince Edward Island, six to Saskatchewan, four each to Manitoba and Alberta, two to British Columbia, and the rest going to Ontario and Quebec.

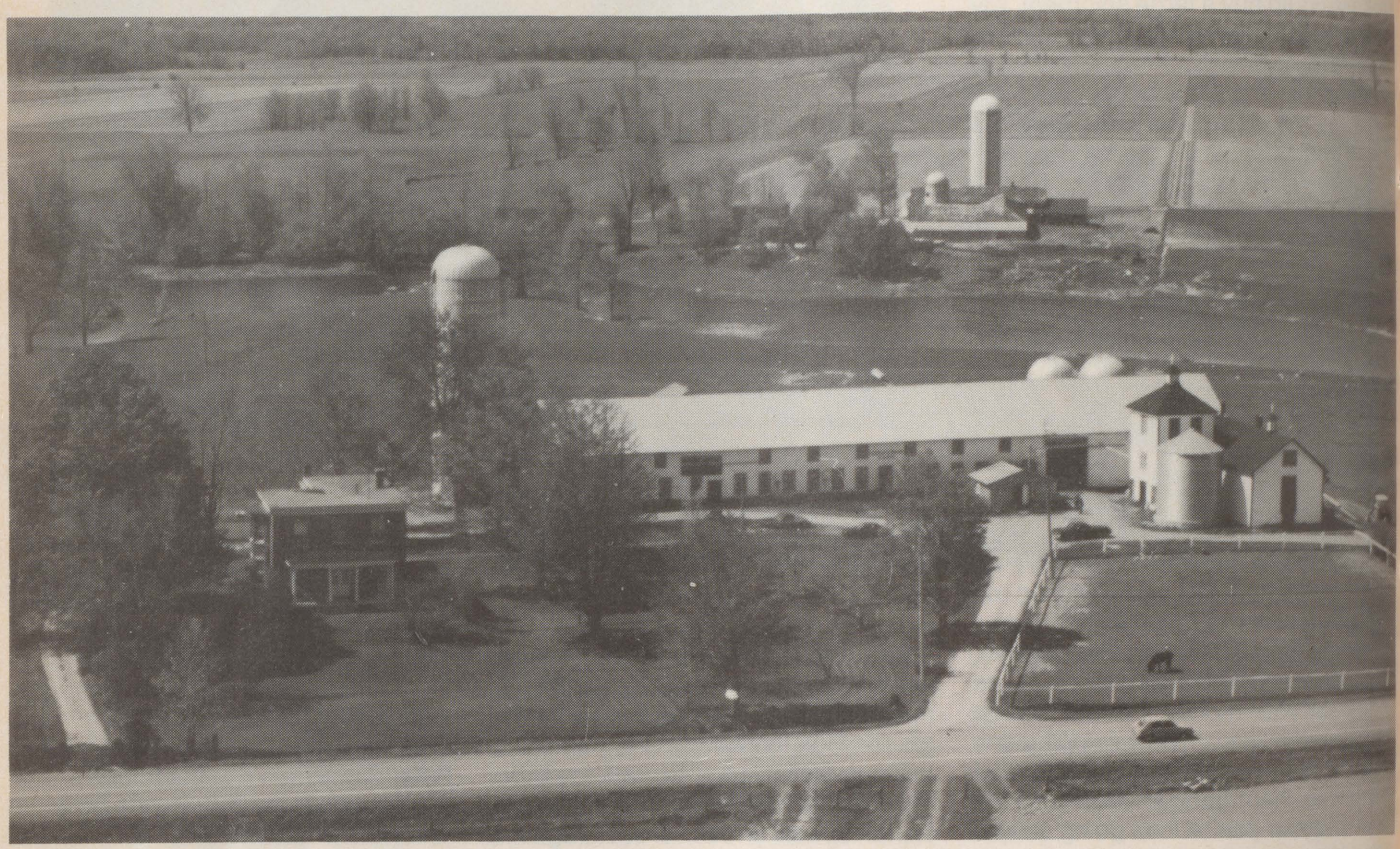
"The sale average," he said, "was $1,012.22, the highest average for a dispersal Ayrshire sale in Canada to that time. Burnside Prudence received the top price of $6,000, which was the highest price for an Ayrshire female at public auction — previous high prices had also been for Burnside cows. Nine head went for over $2,000 and 64 head for over $1,000.

Doug recalled some of the top quality Scottish bulls used at Burnside, Hobsland Masterpiece before 1920 and later Howie's Top Grade and Barr Peter Pan. When it came to cows none could compare with Burnside Blossom Andrietta who was 50 times a grand champion, produced over 100,000 pounds of milk and started a splendid cow family.

Doug Ness still enjoys a good livestock show and the challenge of buying and selling. "I still have one customer who takes three trailer loads of cattle a year. Three of my nephews are in 4-H now — Bill's boys Darryl, Dale, and Ronnie — and I buy them calves. We sent two heifers belonging to one of the boys down to a sale two weeks ago and one topped the sale at $1,700 and the other was queen of the sale and sold for $1,200.

There is considerable overlap in the Ness generations; commencing in the 1920s Mitch assumed much of the herd management and Doug the business of buying and selling for Burnside farm. They continued to keep the Burnside farm in the forefront and participated in local farm community and national livestock organization activities initiated by R.R. Ness. While the Burnside farm was sold 10 years ago, it will long be remembered for its major role in the development of the Ayrshire breed in Canada.

TERRACE BANK FARM
A TRADITION OF EXCELLENCE CONTINUES



Terrace Bank Farm.

Five miles by road or two miles northeast as the crow flies Earle Ness established Terrace Bank farm in 1920. This farm, developed in the shadow of Burnside, gained a reputation for its milk production capabilities as well as the type of cattle it developed. Earle was equally active in the community and national organizations; however, this article covers the more recent era — from the time his son Bobby joined him following graduation from Macdonald, with a Diploma in 1948, to the present when it is now operated as a family farm with Bobby and his son Larry working in partnership. The importance of a good father-son relationship is a good peg on which to start John Moxley's interview with these two progressive dairy farmers.

Bobby Ness I think the thing that is essential for a good working partnership between father and son is trust between them. That's something that I had with my father, and I'm sure I have it with my son, too. We eventually put everything on paper with both of us knowing what was going there. It must be on paper if you want to keep the government from getting involved.

John Moxley How big is Terrace Bank?

Larry Ness It's a little over 400 arpents.

John Moxley Have you changed your crop production much from what your father was doing, Bobby?

Bobby Ness The only crop that is new is soybeans, and we grow a lot more alfalfa now.

John Moxley Did you have to put in drainage?

Bobby Ness The land is all tile drained and consequently we were able to grow better alfalfa. The tile draining was started when my father was here in '63 and '69. We did the rest in '76 and '78.

John Moxley Are you feeding the soybeans raw?

Bobby Ness Yes, up to 200 pounds per ton of feed. We can't use enough of it to supply all the protein, so we do buy some other protein feed.

Larry Ness It's 10 per cent of the grain ration. We sell the rest. We also grow about 50 arpents of grain corn and about 40 for silage. The grain corn is put in a crib and shelled out in May or June. We used to use a grinder mixer, but we're now using a mix mill. We find it easier to mix rations so now we shell all the crib out in one day and put it in the bin. We keep what we need and sell the rest. We grow about 35 arpents of oats, wheat, and barley mixed. We just grow enough for what we'll use; sometimes we have a bit extra.

John Moxley Does all your alfalfa go in as hay or is there some as silage?

Larry Ness Most goes in as hay and if we have a real good crop, we will fill the silo at our heifer barn with third cut alfalfa. We have two hay driers. They have made a big difference in the quality of hay you can make. Last year we took three cuts of hay off of every field. That was a first — I can remember the first time we made a third cut and that was highly unusual. Nobody did that.

Bobby Ness You can probably remember the first time we made hay before the 15th of June.

Larry Ness Now if it's not all made in June it's no good.

Bobby Ness The drainage around here has been really beneficial. I've told many people that rather than go and buy another acre of land to drain what they've got. You can just about double your income. With the subsidies that we got to put the drainage in it wasn't expensive; it was cheaper than buying more land. Our whole operation is based on the fact that we can produce enough to feed our herd in a poor year, and when we have a good year we have a little extra to sell.

John Moxley How big is your herd?

Bobby Ness We're milking from 50 to 55 cows, and most of the time we have around 160 head altogether as we sell a lot of cattle for production.

Larry Ness We raise all our heifer calves and we usually have a few bulls around.

John Moxley Your grandfather R.R. Ness tended to put the emphasis on the 10,000 pound cow and forget about anything very much above that. Bobby, I know you and Larry are talking about 20,000 pound cows and possibly more.

Larry Ness Our herd average is up to 15,000 and over 600 of fat.

John Moxley Your herd is third in Canada for 35 to 50 cows.

Larry Ness Usually we finish over 50 records; we're just a little bit under that this time — 35 to 50 is more competitive anyway.

John Moxley Why would you say your production has gone up?

Bobby Ness My feeling is that we are doing a much better job of looking after the herd. Feeding a dairy cow so that she will give her maximum potential is a very complex thing. We have to deal with four different seasons. The cows do their best when they are in the barn because we pamper them a bit more. Then they are put out in the spring onto lush grass — we have to make adjustments with each season. Through years of experience we have been able to eliminate some of the things that kept production down and thus give the cows a better chance to make a year round record. We found, for instance, that if we feed one of our best cows grain in four portions a day, we could feed her the amount of grain that she needed to produce the amount of milk that she was making. If we tried to do it by twice a day feeding, she would scour on us.

John Moxley What is your feeding practice as far as your concentrate is concerned?

Larry Ness Over the years we have improved our feed quality. Second, we have stored feed all year around. The cows are out on pasture but as we only have some 20 arpents for pasture, they're fed corn silage and dry hay year round. Third, we improved our methods of feeding. When the cows are in the barn they get corn silage and grain first thing in the morning. They get first cut hay before breakfast and at noon they get second-third cut hay — we put it together as it's usually about the same quality, but we keep it separate from the first cut — and the high producers get some grain. At night they get corn silage and grain and first cut hay, and before going to bed we feed second-third cut hay, and the high producers will get some grain then, too.

Normally our roughage will provide more protein than energy so we make up the difference with ground shelled corn mixed with the cow's daily mineral and vitamin requirements. Between the corn silage, the hay, and the shelled corn mineral mix, they'll get about 2 pounds a day. That will supply their needs up to about 33 pounds and above that they get a pound of 18 per cent meal mix for every two pounds of milk so a cow giving 63 pounds would get 15 pounds of grain a day. The fresh cows get 44 per cent top dressing, basically up to three months or if the cow is milking heavy, until she starts to gain some weight back.

John Moxley Is there a maximum amount of concentrate that you would feed?

Larry Ness It is seldom that a cow would get more than 30 pounds a day.

John Moxley: Would that include the top dressing as well?

Larry Ness Yes, but not the 2 pounds of shelled corn.

John Moxley What is the per cent of protein in your first, second, and third cuts of alfalfa?

Larry Ness This year the first cut averaged 16, and the second and third were put in a composite sample because that is the way we feed it and it averaged 21. We have had it average higher than that. The best sample we ever had was young third cut alfalfa and on a dry matter basis it tested 28. We had about 800 bales of that, but we have never come close to that since.

John Moxley How do you handle your dry cows? Do they get alfalfa hay?

Larry Ness We try not to. In the summer they are out on pasture, and we feed them a higher phosphorus mineral but that is all that is special. In the winter they're kept in the barn with the heifers and we try to feed them grass hay. If the silo there is full of corn silage, we'll feed them around 20 pounds of that a day. If it's full of haylage as it is this year, then the cows won't get any silage, just grass hay.

John Moxley When would you start feeding grain for a cow that is going to calf?

Larry Ness About 10 days before.

Bobby Ness We try to have the cow's body weight built up by the time she goes dry and then not necessarily add more to it from then until she freshens so that she is not a particularly fat cow when she calves.

John Moxley Other than through bulls did you get many animals from Burnside?

Bobby Ness Our breeding was fairly similar. Over the years I bought the odd animal in the Burnside sales — I tried to sneak away the better ones! I knew the Burnside herd pretty well having helped then show, and we got a couple of cows that I would say were our foundation cows and eventually were good breeding cows.

John Moxley How many cow families do you have?

Larry Ness We have three main cow families and they all go back to Burnside cows — the Roses, founded by Burnside Rare Rose, and at last count we have 28 in that cow family in the herd now. She was a fourth generation excellent cow and was the ninth highest life time cow in Canada. We showed her five or six times at the Royal and she was never lower than fifth. Her daughter won the udder class at the Royal one year and another daughter has just come out and she was the eighth highest fat producer 10 years old and over, and the granddaughter just had over 100 pounds a day this spring. There are a lot of good individuals in that cow family.

The second cow family would be the Mists, and we've got four generations of excellent two star cows with over 100,000 pounds of milk over 4 per cent and there is the fifth generation that is just completing her first record, and she will be over 500 B.C.A. combined. That will be our first one to go over 500 B.C.A. There are a lot of outstanding cows in that family.

We bought a bred heifer in the Burnside dispersal — Burnside Merrilee — she was our first cow to produce over 100 pounds a day, and she averaged 61 pounds a day for every day she milked in her life, and in her first four lactations she averaged over 20,000 pounds. She was our first 20,000 pound producer. Unfortunately, she died suddenly in her fifth lactation and she just had three daughters, but we have been fairly lucky with heifer calves and have 11 or 12 in that cow family now.

There are other cow families but those are our best ones. Our top producer is Star Lee who is just finishing her fourth consecutive 20,000 pound lactation. She is not a big cow but is probably the best and most efficient dairy cow I've ever milked.

Bobby Ness One thing that we have been pretty particular about is the udders on our cows. Even with the added production we are trying to maintain a cow that will have a small udder and produce a lot of milk from it. It is unbelievable the amount of milk that the cow Larry has just mentioned puts out for the size of udder she has. Whether we are going to be able to find the proper combination of genetics to maintain this or not I don't know. It is not something that the bull selectors take into consideration at all as far as I know.

John Moxley Do you use any of your own bulls or are you strictly AI?

Bobby Ness We have frozen semen stored at St-Hyacinthe from a bull that did well for us that we bought from Scotland together with Uncle Doug. We have 14 and 15-year old cows from him and we've continued to use him on animals that weren't his offspring. At the present time we have a young bull that we're considering using. We're finding that the herds around are beginning to lose their uniformity of type. Every individual cow is a different sort of type and characteristic, and I find that is from the total use of AI.

John Moxley Theoretically you could use the same bull.

Bobby Ness But it's not done. We probably do more than most people and there are two bulls — Star Man and Vagabond — that really fit well in our herd which we are using quite regularly. The reason we are thinking of using this young bull is to refine the leg again a little bit more and put tighter udders on them.

John Moxley Are you using any of the young unproven bulls?

Bobby Ness We try to use a good percentage of them. We breed a number of heifers and some other cows to them. We feel that the program is excellent and that we must contribute to it.

John Moxley Have you been doing any embryo transfers?

Larry Ness We've done six or seven different flushes and we have been involved with about 10. We have one cow here — the Syndicate Cow — that is owned by five people, and we have flushed her twice. We have supplied some recipients for my brother-in-law who has a cow that he has flushed twice. We had 33 pregnancies out of the first eight flushes — the last two haven't been examined yet. We ended up with 13 heifers and 12 bulls.

John Moxley Are you still keen on showing?

Bobby Ness In Quebec we regularly go to Ormstown, Brome, Havelock, and Huntingdon, and we have had practically a full string at the Royal since Burnside was sold in '75.

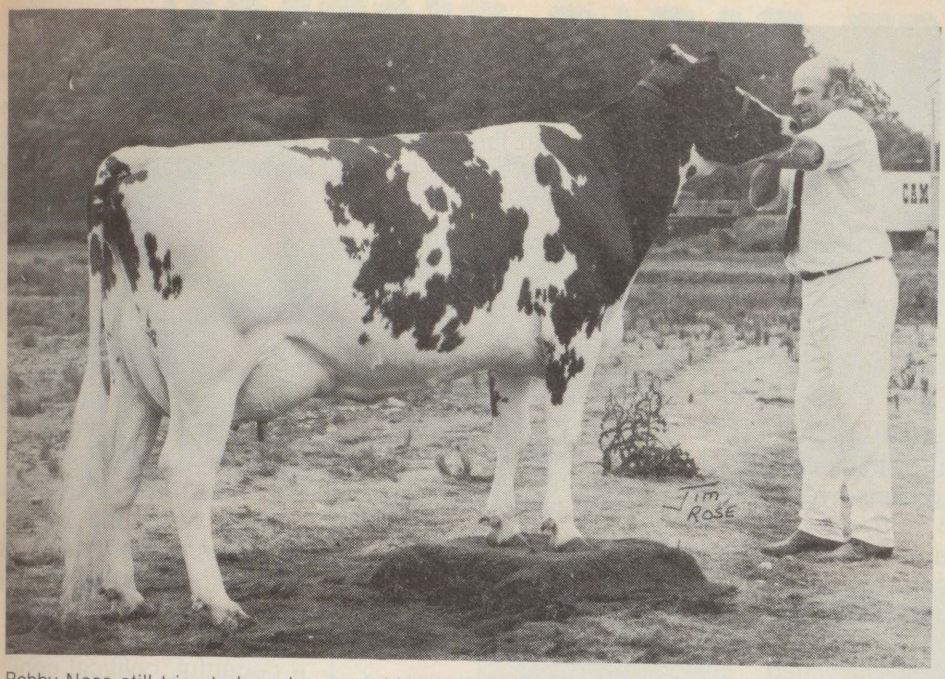
John Moxley Did you get to the Ayrshire Conference in New Zealand in '81?

Bobby Ness Joan and I went to that one and to the one in Great Britain in '77. This year the Quebec Ayrshire Society sent a group of Ayrshire cattle to the World Dairy Expo at Madison, Wisconsin. Joan, our youngest daughter Linda, and I went — we had one cow in the show. Quebec won the State herd. That's a fair that provides quite an education for farmers. It's strictly a dairy show with only dairy cattle and dairy trade booths. The people that go to that fair are dairy farmers or people who want to sell to farmers.

Joan Ness The booths are for milk companies, feed companies, breed associations, and AI units. It is amazing to see the number of foreigners at that fair — people from all over the world, particularly at the semen booths. I enjoy travelling either to the fairs or to conferences and I've often said that we never go on holiday unless there is a cow at the other end, but I'm not complaining any more because it has got me all the way around the world to New Zealand!

John Moxley Have you noticed a change in the role of the farm wife over the years?

Joan Ness I think they used to go out and do chores and help in that way as they are still doing today, but they are also much more involved in the run-



Bobby Ness still tries to breed a cow with a high quality small udder while meeting today's higher production standards.

ning of the business than was expected when I was first married. And, of course, involvement with the community hasn't really changed. I do quite a lot of church work and also with the various home and schools — one year I had three different home and schools to attend because the children were in three different schools. We have always had the 4-H achievement day here every fall since we've been married — actually, I did it one year before I got married. The Aubrey-Riverfield WI come and serve lunch. I am not a WI member, but I do attend some of their meetings and do some driving for them. When my dad retired he and mother moved to Howick; she joined Aubrey-Riverfield WI and thoroughly enjoys it.

John Moxley What do you think are some of the concerns facing dairy farmers today?

Larry Ness We are concerned that the Quebec quota system for industrial milk is indirectly encouraging a lower butterfat test, and I think that's bad for the whole industry and for every breed for a number of reasons. Most of the breed associations, if not all of them, are looking for a higher butterfat test today, especially the Holstein breed. If you watch some of their sales, the ones that don't have any test behind them don't sell for the same as the rest.

When they get lower test milk, the dairies make less money because they have to transform a larger volume to end up with the same product. There is a difference in the quality of the products that they put out in the manufacturing end.

In the fluid end today 2 per cent is the big seller. If you start with 4 per cent milk and skim it down to 2 per cent, there are two advantages: 1) you have more solids not fat and protein left in it and 2) you are putting out a better tasting product — you are putting out a better fluid milk. The other advantage is that with the 2 per cent the processor can make some other dairy product, butter or ice cream or whatever, with that extra butterfat. There is no skim milk powder produced at all. Skim milk powder is our biggest problem because to produce the amount of butter needed in this country, we have to export the skim milk powder, and our export fees are getting to the point where they are unacceptable.

In Ontario the industrial milk quota is in litres and whether your test goes up or down you are allowed to ship the same volume. Their test has been going up gradually over the past five or six years and they have covered it with the cuts in the quota exchange. They have a 15 per cent cut on every quota transfer and that is how they have covered the increase in butterfat per cent in Ontario.

There was an article in a magazine recently about someone who had bought a farm and replaced the Holsteins with Jerseys, and with the same quota they have thousands of dollars more income. There's more to it, but this is the system that we would like to see in Quebec.

I find that a lot of Holstein breeders today are really conscious of their butterfat and are making a real effort to improve it. As a matter of fact Bill Bryson, who has Holsteins, and I prepared a chart comparing Ontario and Quebec quota systems and presented it at our regional and Quebec City producers' meetings. The federation was very interested in the presentation and is planning to study it and present the results at the next annual meeting.

John Moxley People have to be realistic and realize that it is not volume — it is not water that milk is valuable for but rather the contents of the solids that are present there.

Larry Ness The American Jersey Breeders are promoting end product pricing. If people are shipping to a cheese factory, they would get paid according to the cheese yield which would be a big boon to the Jersey breeders and also to the cheese factories because they would get better milk.

Bobby Ness One thing that has developed over the last few years, especially in our provincial Ayrshire group, is that people are getting more involved. They want to improve things, and they will take on projects and work on them until they accomplish something. I'm sure you know that the Ayrshire breeders in this province have accomplished a lot in recent years. There are a number of factors. Certainly the AI unit at St. Hyacinthe has been a big help. The information available today, including that from DHAS, is so much greater than it was 10 or more years ago. It's especially helpful for young farmers.

* * * *

There are few families in North America that span as long a period and have had as successful a career in leadership in agriculture and dedication to a breed of dairy cattle. Bobby (or Robert E.) and his son Larry are applying up-to-date technology and are continuing in the Ness tradition.

FUN FACT FABLE FICTION

by Ralph H. Estey
Emeritus Professor
Department of Plant Science

Soilless Gardening

Various forms of hydroponics and soilless gardening have been practised by graduates of Macdonald College for at least 40 years. John Gilby, who received a MSc degree in Plant Pathology in 1942, was growing vegetables in sand cultures in Labrador in 1944.

When is a Shamrock a Shamrock?

In trying to eliminate much of the confusion over the botanical identity of the "true shamrock," Nathanial Colgan of Dublin collected and received plants from 20 counties in Ireland that the local people had declared to be shamrocks. Of these 19 were white clover, 12 were yellow trefoil, and there were two each of red clover and spotted medic. Not one was wood sorrel, a plant that is sometimes referred to as a shamrock in North America. The results of that survey would seem to indicate that there is no "true" shamrock and that our white clover would be as acceptable, and as saleable, as any "shamrock" around St. Patrick's Day.

Metric Eggs?

Why not package and sell eggs in tens instead of the dozen? It would be much easier to calculate the price of an egg, and because people are eating fewer eggs a packet of 10 is more appropriate than one of 12.

The Empty Garage

Have you heard the story of the absent-minded professor who drove up to his garage, saw that it was empty, and reported to the police that his car had been stolen?

The Limerick

The origin of this popular type of nonsense verse is shrouded in mystery. Limericks have been used to entertain and as vehicles for instruction. There is even a Limerick Prayer Book, published by the Society of St. Peter and St. Paul. A limerick with a religious connotation, but not from any prayer book, goes like this:

> God's plan had a hopeful beginning
> But man spoiled a
> good thing by sinning
> We trust that the story
> Will end in God's glory
> But at present the
> other side is winning.

There are hundreds of limericks about women:

> Rosalina, a pretty
> young lass
> Had a truly magnificent
> ass
> Not rounded and pink
> As you possibly think
> It was gray, had long
> ears and ate grass.

And almost as many feature some peculiarity or silliness of men:

> There was a young fellow named Fisher
> Who was fishing for
> fish in a fissure
> Then a cod with a grin
> Pulled the fisherman in
> Now they're fishing the
> fissure for Fisher.

Never Satisfied

The man with the ideal wife probably wishes he had some other kind.

Superstitions About Money

Over the centuries many superstitions have grown up about money. Some people believe that a purse given as a gift should contain a coin so that the new owner will never be without money or, if you have money jingling in your pocket at New Year's, you'll have money all year long.

The money received from the first customer is retained by superstitious shopkeepers, some of whom will hang it on a wall of their shop to bring them good luck.

Many people wear or carry "lucky" coins. People toss coins into wishing wells for good luck or to have their wish come true. If a visitor to Rome tosses a coin into the water of the Trevi Fountain, tradition says that visitor will return to the city. Coins that were touched and distributed by monarchs to their subjects were once called touch pieces. They were usually pierced and hung around the person's neck as a charm, especially as a cure for the "king's evil," a form of scrofula. This superstition may have developed from a belief in the power of kings to cure diseases, based on the miraculous curative touch of the King of Kings, as recorded in the Bible (St. Mark 1:40-41).

Salt Anyone?

Claims that salt is bad for you should be taken with a pinch of salt.

New Scientist 103: 5 (1984)

Words With Religious Roots

Many English words in common use today have lost their original religious significance. For example, "red-letter day" comes from the old practice of marking religious feast days in red on the calendar. "Holiday" originally meant "holy day." A "scapegoat" originally referred to a goat on which the Israelites placed their sins before turning it loose in the desert. "Propaganda,' which now has a deceitful, political connotation, meant almost the opposite prior to the Second World War. It came from the organization within the Roman Catholic Church known as the Congregation for the Propagation (which in Latin is "propaganda") of the Faith. A "profanity" from pro (in front of), and fanum (temple), originally referred to the irreverant words sometimes uttered in front of a temple. The original meaning of "giddy" was "filled with God." A "zealot" in today's terminology usually refers to a fanatic, but it once meant a member of the Jewish group that defiantly fought the Romans.

Fingertip Guide

Prior to the invention of mechanical pickers, the problem of picking tomatoes that were either too ripe or too green by inexperienced pickers was solved by applying a shade of nail polish that matched the desired state of tomato ripeness. It provided a standard colour guide at their fingertips.

MORE REUNION '84

A popular afternoon tour stop was the Raptor Research Centre with host Dr. David Bird. Attending the dinner-dance on Saturday evening were, background, Louise Duthie, BSc (FSc) '59, Ross Sager, BSc (Agr) '60, and foreground, Eric, B.Sc. (Agr) '59, and Lois (Hawke), BSc (FSc) '59, Johnson, and Janet Ingram whose husband Jordan, a professor in the Department of Microbiology, is BSc (Agr) '59 and MSc (Agr) '61.
Right: Three '49ers catching up on the news, l to r, Vernon Fraser, Larry Yeo, and Clifton Morrison.
Below: Receiving a special gift from Dean Lloyd for having travelled the furthest distance is Martin Lishman, BSc (Agr) '54, who came from Lincolnshire, England.

PRESENTATION OF GOLD KEYS

A project, initiated by the Macdonald Branch of the Graduates' Society, saw the return of the "Gold Key" award to Macdonald College in 1984.

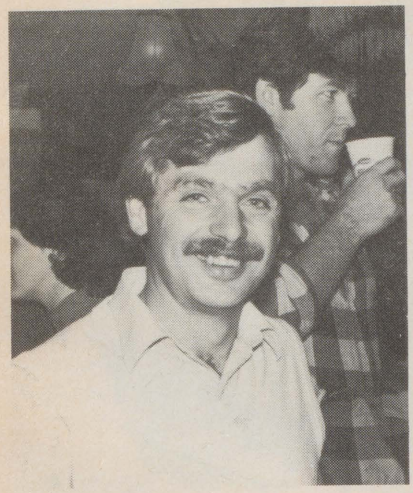
On the occasion of Leadership Day combined with the grads Reunion program, awards were presented to three students in recognition of their leadership and exceptional contribution to extra-curricular activities at Macdonald.

Shelley Wander, a second-year student in the BSc Dietetics program, was present to receive her gold pin from Peter Knox, President of the Macdonald Branch. The two remaining awards were presented in absentia to Stephan Von Cramon and Wilfred Raby.

Stephan Von Cramon had already distinguished himself by being the only recipient of the Graduates' Society Student Award, presented at the Opening Reception and Dinner of the Reunion weekend.

Macdonald Reunion '85

Saturday, September 28, 1985: Keep this date free for Macdonald. Come back to the College for Reunion '85.



Jacques Wera, '74, and David Mingie, '77, were two of 180 who attended the Bar Disco Reunion. Jacques came from his strawberry farm on the South Shore and David from Ottawa. We'll say it here: the smiles in all the photos tell the story — it was a great party! Photos by Hazel M. Clarke.

In a party mood, l to r, Annie Lalonde, Sam Gameda, '78, Gaetan Duplessis, '78, and Marg (Waye) McEwen, '75. Sam is working on a research project in Agricultural Engineering and Gaetan is with Imperial Tobacco in Montreal.

Anna Whitton, left, Class of '75, sent out 300 invitations knowing time and distance would keep 40 or so from attending, but distance didn't stop Laura Cullen Harvey, BSc (FSc) '75, MBA '78. She came all the way from Vancouver where she is a dietitian in one of the hospitals. Anna said that 90 per cent of those invited had worked in the Bar Disco; she did from '74 to '78 and is now with John Abbott CEGEP.

You are cordially invited

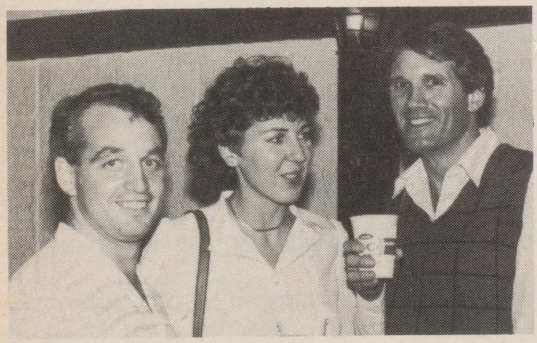
to a

3rd Massive Reunion

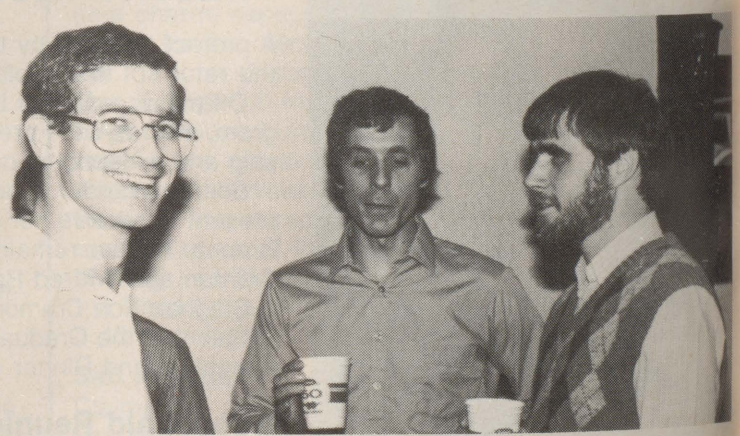
of

"Tout' la Gang"

Place: "Old Bar Disco" **Time: 8:00 sharp - 2:00 A.M.**
Date: November 10, 1984 **Single/Couple**



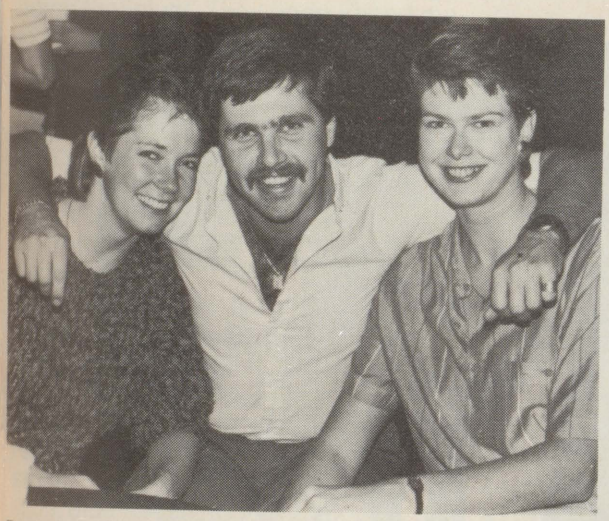
Catching up on Ottawa news where, left, Rick Walter, '76, has a landscape contract with National Defence, is Renée (Aubry) Boyle and Wayne Boyle, BSc '69, MSc '75. Renée and Wayne were married on December 29th and their photo made page 3 of the Gazette (beating the tax man!). Wayne is with Accutec in Ottawa.



Ian Kirkpatrick, left, took collegial sciences at Mac in the 70s; Peter Havard, BSc '75, MSc '78, is on a year's sabbatical leave to work on his PhD here, and Jim Bergeron, '74, is with Dominion Textiles in Montreal.

Cathy Carmen catches up with the news from a couple of '74s: Rick O'Loughlin, left, who is teaching high school on the West Island, and Mike Schofield, who is in Ottawa.

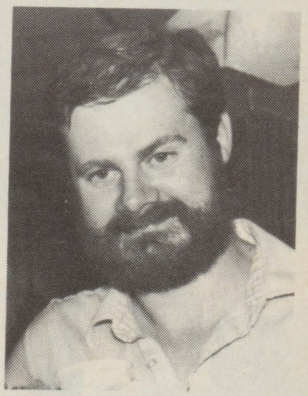
Still at Mac are Bill McDonald, '81, and John Kelly, '79, seen here with Cindy Dodd. Bill is in Animal Science and John is finishing his Masters in Agricultural Engineering.



Back from Switzerland in time for the party Pierre Londorf, '78, greets Fiona Lundi, left, Dip '80, and her friend Lynn. Pierre is regional sales rep in Montreal for Dupont (paint) and Fiona, who next went on to commerce at Concordia, is now studying law at the University of Ottawa.

University of Québec à Montréal professor Bill Vickery, MSc '73, PhD '76, gets Mac news from Sue, '74, and Serge Lussier, '75. Serge is teaching in Plant Science.

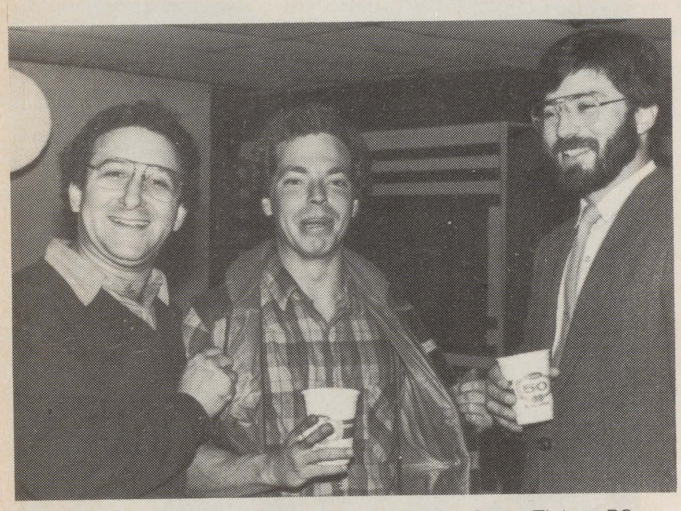
A time for reminiscing: l to r, Marg (Vickers) Dempster, Andy Wiggins, Gael Little, and Howie Hoag, '74. Howie is with a chemical company in Toronto.



Bill O'Neil, '78, MSc '84, took time out from his research job with one of McGill's teaching hospitals to attend the party.

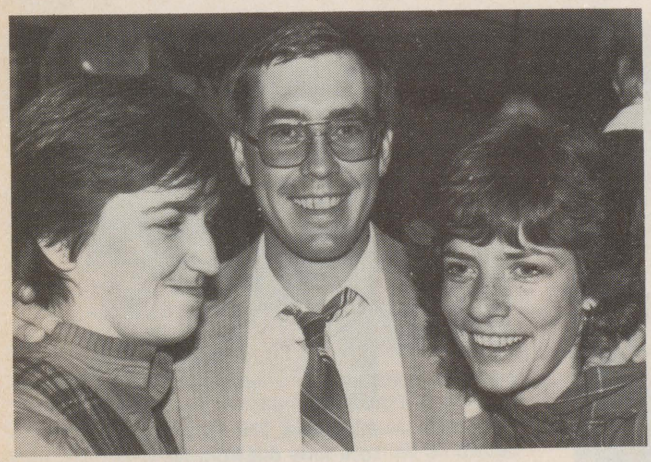
A fun time out from chores: Barry Drummond, '74, and Rick Gilmour, '75, are both farming. Pigs, beef, and dairy cattle keep Barry busy on his Shawville farm; Rick is farming with his brother in Kemptville.

Elaine (Sheppard) Ribeck and Jim Currie, both '81 grads, are seen here with Ann McMahon of the Library. Elaine recently joined Rogar and Jim is with the Diploma Program.

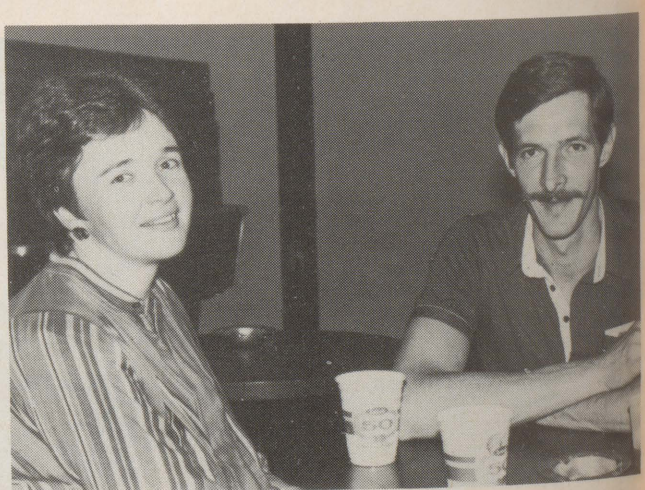


Ste. Anne's Councillor Martin Silverstone, '77, Steve Tinker, BSc '76, MSc '81, and Jack Domaradzki, '76. Steve is working on a project for Dr. Bider of Renewable Resources, and Jack has just completed a project with CIDE (Consortium of International Development in Education) — a CEGEP project. Martin is also working on the recently appointed Royal Commission on Seals and Sealing.

A great welcome back to Mac for Barry Stewart, '71, from Yolande Frechette of the Registrar's office. After Mac Barrie went on to Guelph and now has a small animal veterinary practice in Ottawa.



Judy Sabiston, left, and Donna Walter: attractive bookends for Stephen Ami, '75. Steve is a Professional Associate with Agricultural Engineering.



Sue and Pierre David, '76, travelled down to the reunion from Plantagenet, Ontario, where Pierre is with a farm co-op business.

Gone Farming . . . at last

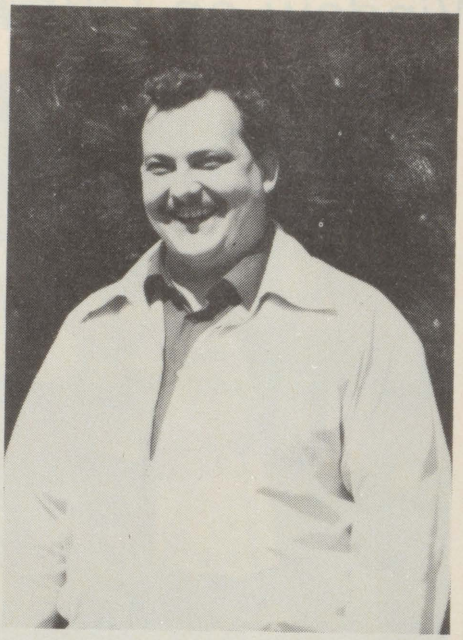
by Hazel M. Clarke

"There were four of us that came up from the Maritimes in a little yellow Dodge Colt wagon: David and Nancy Saunders — she married George Eades, an agricultural engineering student, and lives in Ormstown — Alex Oderkirk and myself. We had everything we owned in that one little car. We got here shortly before midnight, and it was raining. By taking a wrong turn we found ourselves wandering along Ste. Marie Road up near the hospital. Finally, we got into Ste. Annes with all those tiny little streets. We didn't have any place to stay, and I wanted to turn right around and go home that night. They encouraged me to at least wait until morning. That was in 1973, and I've been here 11 years. Now, I'm finally going home!"

Last June after two degrees and a position as Director of Farm Practice in the Diploma in Agriculture Program, Stuart Bowman finally reached his goal of returning to the Maritimes to become a dairy farmer. This was his aim when he left his home in Petitcodiac, New Brunswick, to attend the Nova Scotia Agricultural College in Truro. For the same reason as many other students, Stuart chose to finish his BSc atMacdonald because it is small.

"I didn't feel I could handle a big university. I might have gone to Maine but my girlfriend at the time decided not to go there, so I came to Mac. I got my BSc in general agriculture and did my Masters in genetics."

Stuart claims that his best memories of student days are of the old bar disco which was located in the basement of the Centennial Centre. He has kept in touch with a few of his classmates, particularly Maritimers whom he has met down there at meetings over the years — earlier in the spring he met Earle Demerchant who is in Sussex managing a new butter plant that is reputed to be one of the most efficient in North America. He doesn't expect to meet many graduates in Rexton County, New Brunswick, as it is not real farming country, but he's 50 miles from Moncton and knows he will bump into them at Holstein meetings and 4-H activities in that area.



Stuart Bowman.

Stuart told me that a friend had said to him, "I hear that you are going into farming full time." I said "yes" and he went on, "and you with a Masters degree." "Well," I answered, "I'll try despite that!" Stuart is glad that he went on to do his Master's and said he did so because he felt that he did not get enought dairy in the BSc program. "We had one course at that time and, though it was a good introductory course, no one ever delved into how to work out quotas or milk cheques or pedigrees — all sorts of things that are important for dairy farmers. We got into the basics of nutrition, which is great for a first course, but as a dairy person I felt then and I still do that we needed a second course. The degree courses are good," Stuart Bowman continued, "for a person going into research, but for someone who is going to become an ag rep or an agronome and is going to go out and talk to farmers I feel they are not practical enough. He's got to know how quotas work, what kind of mix mills work better than other mix mills, how to read an extended pedigree, what a pedigree is worth, how much embryo transfers cost, and so on."

Students are getting over to the college farm more than they used to and Stuart is pleased to see this change. But he still feels that many of them do not have the "outside the research farm experience." Even though he realizes that organizing some industrial experience would be difficult, he pointed out that he worked in various areas during the summers including a feed testing laboratory and with computers on the least cost feed formulation. "A summer on a farm and a summer in industry, would that ever be good," he said.

Although he may have some reservations about his BSc degree, he was quick to point out that "I got a tremendous amount of information on dairy production out of my Master's program. Using DHAS and working under Brian Kennedy and John Moxley I did surveys on dairy farms and got to see what farmers were doing and what was working well for them. I have nothing but respect for Dr. Moxley. If you have an idea and it sounds good, he is the type of person that says go ahead and do it."

Stuart's opportunity to see what was working for the farmers and what wasn't carried on when he took on the position of Director of Farm Practice for the Diploma Program. His desire to farm, also helped him in his job. "In order to deal with students working on farms," he told me, "you've got to want to farm yourself, because if you are bureaucratically-minded, you won't be able to deal with either the students or the farmers. Also by visiting so many farms, you see what is good and what is bad. The farmers who are being really successful are doing everything by the book. They are feeding the way they are being told to feed and breeding the way they are being told to breed, and it is paying off. And," he continued, "good farmers will soak up information from any and all sources. They are full of questions, and it is good for our students who are working for them. They will ask our students what they think, if they have any special ideas on something, or what they have been taught. The farmers who are not progressing feel they already know all the answers and therefore don't seek advice.

Although he may not miss travelling around the countryside on a hot summer day, he said he will miss being able to see the farmers "who have been just great" and watch and see how things are working out for them.

(Continued on page 38)

A Window on Our Past

by M. Elizabeth Jennaway-Eaman
School of Food Science

The early Macdonald Household Science uniform.

The McCord Museum, located at 690 Sherbrooke Street West in Montreal, has a costume collection which is the largest in Quebec and is second only to that of the Royal Ontario Museum in Canada. The collection of costume and systematic study of this relatively new discipline began at the McCord Museum in 1957. Isabel Dobell, now Emeritus Curator, let it be known that the museum was interested in dress and, as stately homes with spacious attics were demolished to make way for apartments and expressways, costume was quickly acquired.[1]

The costume department collects, researches and documents Canadian costume. The artefacts are carefully conserved by skilled volunteers working under Mrs. J. Beaudoin-Ross the present curator of costume. Only a very small part of the collection is on display at any one time, and the current exhibition, which can be viewed until June 30, 1985, is called "A Centennial of Costume" to celebrate 100 years of Women at McGill. Some of the current exhibits were worn by former students and staff at McGill, others are representative of each period and show the directions taken towards more freedom in female attire during the late 19th century to the present day.

By 1884 the bustle was highly fashionable, but the bodice was still boned and corseted, severely restricting vigorous movement. However, the early female students mindful of their role are said to have worn simple cotton or wool dresses and wool not silk stockings as they did not wish to appear frivolous. Their outer clothing consisted of heavy wool capes and scarfs.

In contrast to their choice of wool is Sir William Dawson's gown of corded silk which he wore as Principal of McGill University. Sir William permitted ladies to enter McGill, when a $50,000 bequest from Donald A. Smith, the future Lord Strathcona was received and the first "Donaldas" started at McGill in the fall of 1884.

The late 19th century saw the development of tailormade costumes with clear masculine lines, worn with a blouse and tie, much more suited to the "new woman" with her interest in education, career, and sport.

Macdonald College has always accepted women and until recent years all students were familiar with the green and white striped uniform with stiff white celluloid collar, gold pin, and white apron which was worn by the first Household Science students. The only major change in over 50 years of the uniform was the length of skirt, which in 1911 permitted just a glimpse of an ankle.

As the 20th century progressed, skirts were shortened and by the mid 1920s, flapper dresses would be worn to a "thé dansant" at Royal Victoria College. A thé dansant was often a fund-raising event for inter-collegiate basketball games or any of the other female sports which were now widely accepted.

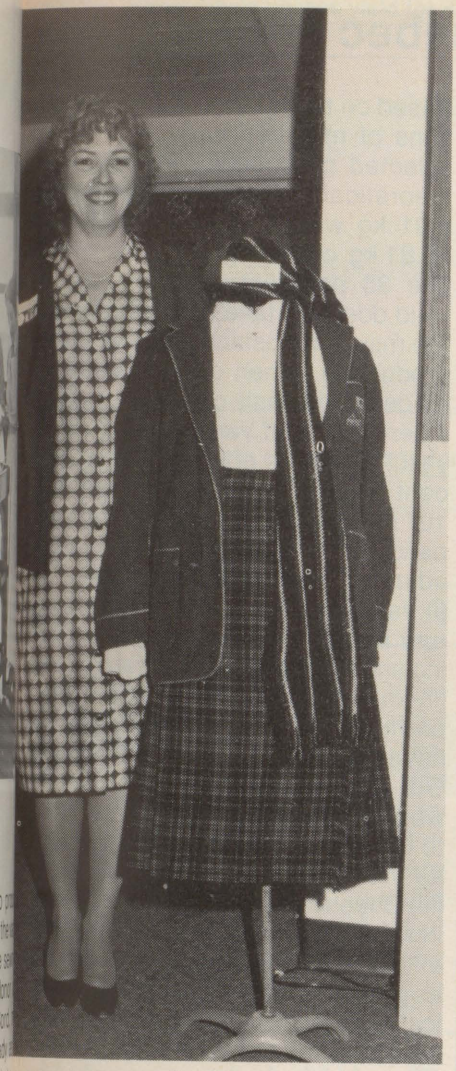
By the 1950s women were also wearing the McGill blazer, which had formerly been a male perogative, and the blazer enabled one to proclaim one's sporting activities by the variety of symbols which could be sewn on. Mrs. Robert Legge, the donor of a McGill blazer to the McCord, must have been a very active lady as her blazer is covered with symbols.

Former Macdonald College education students wore the green and gold blazer, as they had strict dress codes for student teaching which included the Macdonald tartan kilt, white blouse plus a sweater or blazer. Three-hole Oxford shoes were also specified for the mid 1950s would-be teachers.

Macdonald College was able to contribute to the McCord exhibit due to the foresight of Miss Margorie Jenkins, a former textiles and clothing professor. She started a small teaching collection and several interesting artefacts have been donated, including infant's underclothing from people who escaped from the American civil war and raised their children in Kingston, Jamaica.

There are artefacts from the 19th century to the 1930s. In order to keep the collection "up-to-date" Macdonald needs costumes from the 40s, 50s, 60s, and 70s to provide today's students, who are studying the History of Costume and Clothing Design, with the latest history.

[1]Beaudoin-Ross, J. "Costume at the McCord." Apparel Studies Association of Canada newsletter, Spring 1983. p. 2. Morgentaler, G. "McGill Alumnae through the Ages." McGill News/Summer, 1984, p. 8.



Emily Reid, Education '60, poses with a typical student teacher's uniform.

Unlike a museum collection, which is dedicated to the conservation of artefacts, a teaching collection may not last forever. It is handled and modelled so that students can fully understand, for example, the excessive restrictions imposed by boning. The weight of Victorian clothing with six layers of petticoats including the obligatory flannel layer has to be experienced.

Technological changes are also shown with the introduction of machine stitched garments and, a relatively late-comer, a metallic zipper which was rarely seen until the 1930s.

Social history can be examined through dress. Clothing provides a language which can be studied and interpreted. Similar to other art forms it creates strong impressions, reflecting individual taste and creativity as well as the lifestyle of the individual and the world in which he/she lived.

P.S.

Far from News

Enclosed is a cheque for a subscription to the Macdonald Journal. Being so far West now I feel quite isolated from "eastern" news. I shall be anticipating the arrival of each issue.

Lorraine Smith, BSc (H Ec) '69,
Saskatoon, Sask.

Highly Interesting

Your Journal has been familiar to me since I was at Mac and your interest in reaching grads is commendable. The May issue was highly interesting — the CANAGREX article was good.

Glen S. Ells, BSc (Agr) '55
Canning, N.S.

Most Interesting

Keep up the good work. I find the new format and material most interesting.

John Purdon, BSc (Agr) '69,
Chateauguay, Que.

In Haste

I enjoy the new format very much. Keep up the good work.

Ethel McGibbon
Brownsburg, Que.

Super Reading

I wanted to tell you how much I enjoy the Journal. It's such a super way to keep in touch with the activities, research, but above all — the people! It was great to read about the 25th Woodsmen anniversary. An event not to be missed, I'm sure. That good old Mac magic never stops.

Ann Louise Carson, BSc (Agr) '81
Sherbrooke, Que.

To Pursue a Degree

I am a teacher at the Cayon Secondary School in St. Kitts where I teach Agricultural Science. As a teacher at this school, I have been constantly exposed to the Macdonald Journal which, as a result, encouraged me to pursue deeper study in the subject area. I am at present a possessor of a diploma in agriculture which I achieved in 1981 at the Guyana School of Agriculture in South America, and I am now encouraged to pursue a degree course at your University.

Patrick Welcome
St. Kitts

Appreciated Past Issues

I have procrastinated a long time in becoming one of the Journal's subscribers even though I have really appreciated the editions I have read in the meantime. I look forward to receiving news of events and research at "Mac," of the people there and those that I knew during my time there.

William M. Spriggs, BSc (Agr)'51
Victoria, B.C.

Letter to Dorothy E. Swales

Thank you very much for taking the time to write the excellent article for the August 1984 Macdonald Journal. Your historical perspective has helped me to understand a little better the history and development of Macdonald College and of Agricultural Science in Canada. You write in a style which encourages one to read on. Your writing helps us readers recall pleasant memories from our own college and life experiences.

If you manage to write some more articles for the Journal, I will be one of your avid readers.

Robert S. Broughton,
Professor, Department of Agricultural Engineering.

Variation in Cheddar Cheese Yield in Quebec

by Professor K.F. Ng Kwai Hang
Department of Animal Science

The share of milk produced in Canada which is used for the manufacture of cheese has increased from 13 to 27 per cent during the 15-year period between 1968 and 1983. Such a shift in the pattern of milk utilization is having profound effects on the dairy industry. A survey of Quebec cheddar cheese factories in 1981 indicated that although there was a general awareness that cheese yields in Quebec were lower than expected, there was a lack of adequate data on the influence of milk composition on the conversion efficiency of milk to cheese. The topic of cheese yield is of great importance to the cheesemaker, the milk producer, and the dairy industry in general because it is obvious that cheese yield is directly related to profits. In a loose sense, cheese yield may be defined as the number of kg of cheese which can be produced from 100 kg of milk. Factors which can influence cheese yield markedly are: composition of milk, moisture content of cheese, degree of recovery of fat and casein in the cheese curd, type of starter, type of milk coagulating enzyme, and manufacturing practices involved during the processing of milk into cheese.

Cheese yields are directly related to the final moisture content of the finished cheese. A high moisture cheese gives high yield and a low moisture gives low yield as illustrated in Table 1. Therefore, reporting of cheese yield for comparison purposes requires a knowledge of moisture content of cheese. As many cheese factories aim at making a cheddar cheese with 37 per cent moisture content, the best standard expression of cheese yield is the number of kg of 37 per cent moisture cheese produced from 100 kg of milk. Omission of the cheese moisture content diminishes the meaning of cheese yield values and may explain the conflicting cheese yield values apparent in dairy literature.

Predicting Cheese Yield

About a century ago, Van Slyke of Geneva (N.Y.) Experimental Station observed the composition of incoming batches of milk and resulting cheddar cheese yields in several New York State factories. From these data, he derived the classical formula for estimating cheddar cheese

$$\text{Predicted Yield} = \frac{(0.93\ \text{Fat} + \text{Casein} - 0.1) \times 1.09}{1.00 - \text{Water (expressed as kg water/kg cheese)}}$$

This formula indicates that fat, casein, and insoluble salts contribute greatly to cheese yield and on the average 7 per cent of the fat and 0.1 kg casein per 100 kg milk are lost during various phases of cheesemaking. Also, the cheese weight increases by 9 per cent due to insoluble milk salts and added common salt used to flavour the cheese.

How variable is the cheddar cheese yield in Quebec?

To answer this question, we undertook a 16-month project involving 13 cheddar cheese plants distributed across the Province of Quebec. Representative samples of milk, whey, and cheese were taken from identified cheese vats in the plants on a semi-monthly basis. Measurements of milk and cheese weights for these sampled vats were recorded. The samples were refrigerated and transported in coolers by courier to our research laboratory for various chemical analyses. The data were analysed statistically to find the effects of calendar month of cheese production, factory, and milk composition on 35 per cent moisture cheese yield and Van Slyke's predicted yield.

Data collected from 600 production vats indicated that the average moisture adjusted yield was 9.42 kg with a range of 8.75 kg to 9.95 kg. Considering an average production vat of 10,000 kg of milk, this translates into the realization of 875 kg of cheese for the least efficient production compared to 995 kg for the most efficient production — a sizable difference. Based on the fat and casein compositions of milk that went into the 600 selected production vats, the mean theoretical yield was calculated to be 9.91 kg with a range of 9.26 kg to 10.81 kg cheese per 100 kg of milk. The 35 per cent moisture adjusted yield does not take into consideration the milk composition used for cheese production. When comparisons were made on the basis of adjusted yield as a percentage of Van Slyke's predicted yield, the mean efficiency was 95 per cent with values ranging from 81 to 107 per cent. There are several explanations for discrepancies between adjusted and predicted yields:

(i) Van Slyke obtained his data a century ago at a time when cheesemaking and milk collections differed widely;

(ii) Natural shifts in composition of milk, particularly the fat to casein ratio may have occurred in the past decades. Our study showed that adjusted yield was maximum for milk with a casein to fat ratio of 0.68 to 0.70 and declined as the ratio increased or decreased.

(iii) Cheese factories are not recovering the fat and casein in milk to the extent of 93 per cent and 96 per cent as predicted by the Van Slyke theoretical yield formula, i.e., there are higher losses of fat and casein in the whey than predicted. We have observed recoveries of fat and casein as low as 79 per cent and 87 per cent, respectively.

Causes of variation in cheese yield

Factory, month of production, and factory by month interaction accounted for 75 per cent of the variation in adjusted yields between individual vat samples. Some of these variations would be confounded with milk composition; however, it is clear that factory differences accounted for 39 per cent of the variation. Variation in yields experienced by different cheese plants for the different months of the year are shown in Tables 2 and 3.

Table 1. Yield of cheddar cheese containing different moisture levels

Cheese Moisture (%)	Cheese Yield (kg/100 kg milk
33.66	9.22
36.34	9.36
36.95	9.62
39.09	10.12

Table 2. Variability in cheese yield for different factories

Factory #	Cheese Yield (kg/100 kg milk)	
	Adjusted	Theoretical
1	9.50	9.26
2	9.47	9.67
3	9.25	9.86
4	8.75	10.81
5	9.68	10.07
6	9.62	9.86
7	8.87	10.59
8	9.95	9.30
9	9.18	9.78
10	9.58	9.80
11	9.66	9.84
12	9.42	9.82
13	9.57	10.14

Table 3. Variability in cheese yield for different months of the year

Month of Year	Cheese Yield (kg/100 kg milk)	
	Adjusted	Theoretical
Jan. — Mar.	9.47 — 9.59	9.75 — 9.92
Apr. — Jun.	9.29 — 9.35	9.63 — 9.85
Jul. — Sept.	9.12 — 9.41	9.86 — 10.09
Oct. — Dec.	9.44 — 9.46	10.05 — 10.39

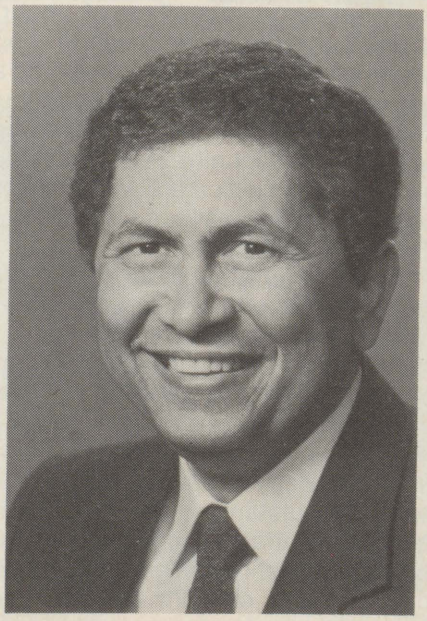
The lowest adjusted yields were observed in factories number 4 and 7 with values of 8.75 kg and 8.87 kg, respectively. Based on the fat and casein contents in milk received by these factories and the Van Slyke formula for predicting yield, they were expected to have a yield of 10.81 kg and 10.59 kg cheese per 100 kg of milk. The low efficiency of recovery (81 per cent and 84 per cent) seen in those two factories was partly due to excessive loss of fat and casein in the cheesemaking process as confirmed by the high contents of these two milk components in the whey from these two factories. Factories number 5 and 8 were among the most efficient in terms of yield with values of 9.68 kg and 9.95 kg for adjusted yields and 96 per cent and 107 per cent for yield efficiency. In contrast to the least efficient factories, factories number 5 and 8 produced a cheese whey with the minimum amount of fat and casein.

Adjusted cheese yield was lower between the months of April to August than between the months of September to March. Variation in cheese yield over the months was due in part to the seasonal composition variations in milk as indicated by the values for theoretical yield. Unfortunately, lowest cheese yields are encountered during the period of milk flush. Based on milk composition only, the most expensive periods to manufacture cheddar cheese in Quebec were the spring and summer months.

Our study indicates that there were seasonal as well as regional differences in the composition of milk received and in the yield of cheese in different cheese plants. The yield of cheddar cheese depends to a great extent on milk composition. Cheese factories have different efficiencies in recovering fat and casein during cheesemaking. Although some factories are receiving milk with higher contents of fat and casein, their cheese yields are lower due to higher losses of fat and casein in the whey. This problem may be related to the overall manufacturing practices which are involved.

Milk and Milk Products in Human Nutrition

by Dr. Vic Amer
Vice-President of Scientific Research
Dairy Bureau of Canada and
Auxiliary Professor, Department of Agricultural Chemistry and Physics



Dr. Vic Amer

Milk has been one of the human race's chief foods down through the centuries. Long before the advent of modern nutritional research man knew by instinct or learned from observation that the milk of the cow, buffalo, goat, sheep, ass, mare, and other mammals was good for him and his children, but he did not know why.

Today, we know a great many reasons as to why milk should form a substantial part of the human diet. Science has discovered that it probably supplies a greater assortment of nutrients than any other natural food. While no single natural food is so complete that it alone can properly develop and maintain the body throughout its entire life span, milk is now regarded as nature's most nearly perfect food. Milk is rich in carbohydrates, proteins, fats, minerals, and vitamins — the substances essential to the growth and well-being of the entire animal kingdom. Only the whole carcass of an animal, including the bones and the liver, could contribute as much as milk, taken as a single food. Some people, such as the nomadic M'Bororo of West Africa, live for months exclusively on milk.

Food scientists and nutritionists have always urged an increased use of milk either taken alone or as an ingredient in many types of formulated foods. These scientists have particularly emphasized the advantages to be gained by using milk in the preparation of foods made from cereal grains. The protein of these grains, incomplete in themselves, are rendered complete

with milk proteins. Cereal grains are known to be deficient in two very essential minerals, calcium and phosphorus, and milk is especially rich in these two essential elements.

Milk best displays its nutritive value as a component of a mixed diet. Half a litre of milk supplies some 25 per cent of the calories, some 40 per cent of the protein, some 70 per cent of the calcium and the riboflavin, and one third of vitamin A and thiamine believed, on a generous assessment, to be required daily by a five-year old child.

Milk is a complex mixture consisting of an emulsion of fat and a colloidal dispersion of proteins, together with the milk sugar (lactose) in true solution. The major constituents are accompanied by various minerals (notably calcium and phoshorus), vitamins, enzymes and various minor organic compounds such as citric acid, some of them nitrogenous in nature. The characteristic opaque colour of milk is due mainly to the dispersion of the milk proteins and the calcium salts.

Milk lipids rate high for their pleasing flavour which is not duplicated in any other type of edible fat and which improves the palatability of many other foods. Milk fat is easily digested, the coefficient of digestibility being 97 for man. In a study of patients suffering from stomach and intestinal disorders, foods baked or fried with butter fat were tolerated, while other fats produced stomach aches (Coombs et al., 1965). Babies suffering from diarrhea showed better nitrogen retention when five per cent of butter was added to their diet (Birch, 1980). Some researchers (Babayan, 1981; Grande, 1980; Bach et al., 1977; Bach 1975; Sailer and Berg, 1974; Schulz, 1969) pointed out that the fatty acids of short and medium chain length at the ratio found in milk fat may play a role in the control of overweight and the lowering of the serum lipid concentration.

Fresh milk turns sour on keeping and this property has been used by man since the beginning of history in the preparation of countless palatable forms of soured or fermented milk to save it from spoilage. Souring inhibits and later destroys many pathogenic bacteria, particularly typhoid and paratyphoid organisms and noxious coliforms, so that outbreaks of intestinal disease, so common with uncultured milk in hot countries, are much less likely with fermented products.

Certain metabolites are produced during the biochemical process and some have been claimed to be antagonistic to food-borne pathogens which, if allowed to enter fermented milk, are inhibited by these metabolites and thus prevented from having a damaging effect on the host (Gilliland and Speck, 1977; Shahani et al., 1976).

A Widespread Belief

Since the days of Metchnikoff, the belief is still widespread that fermented milks owe their healthfulness not only to the depression of pathogens but also to the establishment of a specific lactic acid flora in the human intestine.

During the growth of lactic cultures, certain modifications of milk constituents occur, primarily the fermentation of lactose to lactic acid and the enzymatic degradation of proteins and lipids (Amer, 1983; Kilara and Shahani, 1978). Culturing bacteria perform these chemical changes in order to utilize the complex molecules of protein, fat and carbohydrate as simple nutrients. The predigested milk constituents of cultured milk have been postulated by some researchers to be nutritionally superior with improved biological value to milk from which it was made (Rasic et al., 1971).

The beneficial health effect of lactobacilli in cultured dairy products was studied by Mann, 1977, and Mann and Speorry, 1974, and reported that American adults and the Massai tribesmen fed large quantities of yogurt showed significant reduction in their serum cholesterol. A diet containing a large population of lactobacillus acidophilus significantly lowered the activities of fecal nitro-reductase and glucoronidase which are a high risk to colon cancer in meat-eating individuals (Hargrove and Alford, 1978).

The change of lactose in milk into lactic acid or alcohol, or both in cultured dairy products, decreases slightly the calorie content of the product, but not by more than 4 per cent with most sour milks.

Of the important nutrients found in milk and dairy products, calcium is probably outstanding. In many countries where the milk intake is low, the customary diet remains unbalanced in calcium, and calcium deficiency is prevalent as, for example, in many parts of the Indian subcontinent. Calcium is present in significant amounts in a very limited number of foods. Milk and dairy products are considered our best nutritional source of calcium. They contain more calcium per unit of dry matter than most other foods.

In addition, it has been reported (Shafasma, 1984) that the utilization of calcium in milk by the human body is very efficient since calcium absorption is promoted by other components of milk such as lactose, protein, vitamin D, and citric acid. Signicant contribution as to the benefits of dietary calcium has been reported recently by McCarron and Co-Workers, 1984. Their research using data collected from 10,372 individuals, 18 to 74 years of age, has concluded that lower calcium intake was the most consistent factor in hypertensive individuals. Across the population studied, higher intakes of calcium, potassium, and sodium were associated with lower mean systolic blood pressure and lower absolute risk of hypertension. Their findings surprisingly indicated that diets low in sodium were associated with higher blood pressure when compared with high calcium diets. McCarron and his associates, 1984, have strongly suggested that low consumption of dairy products (the major source for calcium) serves as a marker of hypertension.

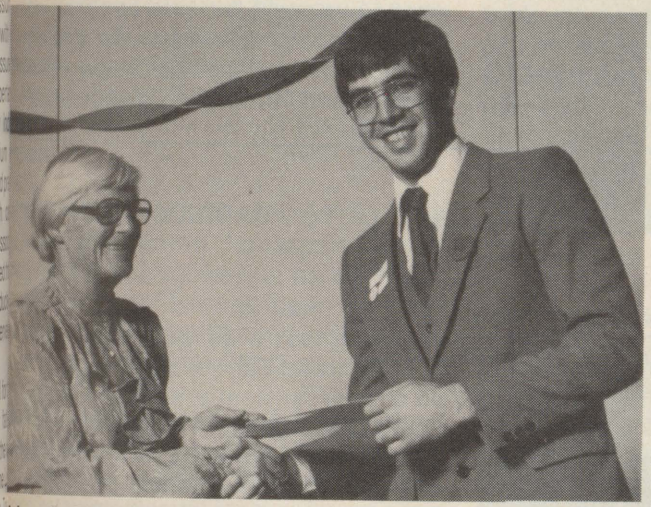
Calcium was also credited for blocking the harmful effects of fats and phosphates on the lining of the colon. Dr. Robert Bruce, 1984, of the Ludwig Institute for Cancer Research, Toronto, has noted that increased dietary fat may promote colon cancer by increasing the level of free ionized fatty acids and bile acids in the colon contents. In the presence of calcium ion, the irritating and toxic effects of the free fatty acids on colon epithelial cells could be reduced by being converted to insoluble calcium soaps.

To sum up, in biblical times, the ideal home was in a "land flowing in milk and honey." Today, a common expression used in reference to nutrition is that "milk is a most nearly perfect food." With only nature as a guide, the young thrives on the mother's milk until it begins taking other foods. Often, it grows at an astonishing rate; the suckling pig almost trebling its birth weight in a little over two weeks. It is only when man interfers with nature that deficiency diseases such as rickets attack the suckling.

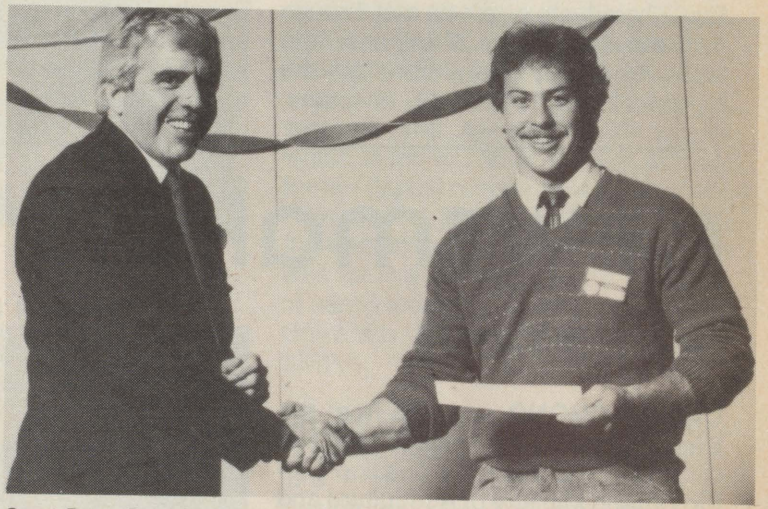
SCHOLASTIC AWARDS BANQUET, NOVEMBER, 1984

There were some 120 awards and prizes; among them was the new Montreal Terra Cotta Ltée Prize which is presented to an Agricultural Engineering student who obtains high academic standing and is interested in drainage, irrigation, and land improvement work. The prize was presented by Michel Gaillardetz to Eric Ouellette.

The W.G. MacDougall Memorial Scholarship was presented by Dr. William Rowles to Miss Sylvie Poirier in recognition of her excellent academic record in animal science studies.



Mrs. S. Parker, Quebec Women's Institute President, presented the QWI Bursary to Diploma student Donald Garfat.



Grant Ross, President of the Macdonald Branch of the McGill Graduates Society, presented an Alumni Bursary to André Hould, a second-year student.

Linda Currie presented the Janet Morrison Robb Bursary for Women to Dietetics student Rosemary Szabadka.

Richard Caron presented the new Monsanto Canada Inc. Prize to Colleen Palmer, a senior student in Plant Science. Colleen also received the Dorothy Newton Swales Prize for highest standing in the systematic botany course.

(Continued from page 31)
He'll also miss arriving "just by chance" around mealtime at such farms as the Carsons in South Durham or the Neelys in Dewittville. "It's amazing how good some of those people can cook. The first time I arrived at an asparagus and geese farm in the Townships I was invited in for asparagus soup — was it ever delicious."

Even though they hid his truck not too long ago and replaced his office chair with a bale of hay on another occasion, he said he will miss the students. "They are all good people, and you can get pretty friendly with many of them." He said that it has been quite easy to match the students up with different farms, and that they often found their own."

That's the past; what does the future look like for Stuart, his wife Martha, a Dip '77 graduate whom he met through 4-H activities in the Maritimes, and baby Kimberley Jean, born on the fourth of July? It's full of plans, changes, and hard work, and Stuart didn't expect to get it all done in the first year. Stuart and Martha were farming part time in Glengarry County in Ontario just over the Quebec border. Now he is going into partnership with his wife's parents. At present they have a cow-calf operation and a few cows that they milk for cream. Through ARDA they were able to get 110 cleared acres of really good land to go with the 100 they had, and that is what convinced Stuart that he could at last start to be a full time farmer.

"We'll stay with beef for the present and then switch over to Holsteins. When we convert it will be a free stall operation with a milk parlour. One of the newer things that I hope to adopt is a computerized feeding system because as far as I am concerned a parlour is to milk in, not to feed in. Eventually I'll have to have a hay drier and build some silos because the weather down there is not ideal for making good hay. I hope to start with 30 cows milking and expand to 45. Quota is a little cheaper than it is here but then you don't get quite as much for your milk so I guess the problems are the same everywhere."

Stuart said that there are only about 11 farms in the immediate area and the closest one is about five miles away. On the farm they have a light sandy soil and the pH is good because they used to spread lobster bodies on the land to get rid of them. He told me that Martha prefers being outdoors and that her mother enjoys gardening so they plan to put in a pick-your-own strawberry operation as well. Stuart is also keen as he paid his way through NSAC by growing and selling vegetables.

Spare time: apart from getting involved with Holstein associations, he would like to get back into 4-H work, and he just might find time to complete a model boat that he started back in the more relaxed days before part-time farming and working at Macdonald.

newsmakers

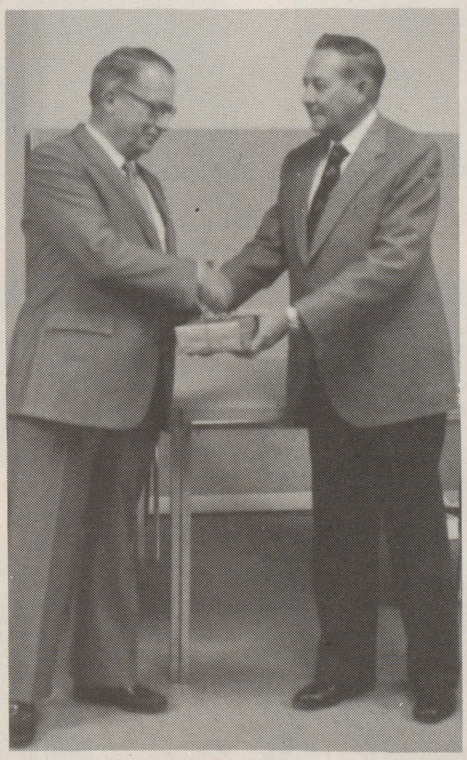
on campus

CALVIN CHONG resigned from the Department of Plant Science effective October 15 to accept a position with the Ontario Ministry of Agriculture and Food. He is working at the Horticultural Research Institute at Vineland Station.

DR. GARTH COFFIN, Chairman of the Department of Agricultural Economics, has been appointed Chairman of the Expert Committee on Agricultural Marketing and Trade for a three-year term ending in 1987.

ROGER CUE has been appointed Assistant Professor (Special Category) in the Department of Animal Science after serving as Research Associate with the Department since 1982. Dr. Cue completed his BSc degree at Newcastle-upon-Tyne and his PhD at Edinburgh.

BERTRAND FARMER has been appointed Director of Farm Practice in the Diploma in Agriculture Program replacing **STUART BOWMAN** who has resigned to go dairy farming in N.B. Bertrand Farmer was brought up on a dairy farm, attended Le Collège Bourget at Rigaud, is a Dip '75 and a BSc '80 and is currently completing his MSc on the nutritional status of betacarotene. He has been with DHAS for three years.



Bill Shipley, BSc (Agr) '48, right, was among those who retired recently from Macdonald. He had 22 years of service at Mac and is pictured here receiving a gift from classmate L.E. Loyd, Dean of the Faculty of Agriculture.

PROFESSOR W.F. GRANT, Department of Plant Science, has been appointed Adviser to the World Health Organization's International Program on Chemical Safety Collaborative Study on Short-Term Tests for Genotoxicity and Carcinogenicity. The Committee will formulate a collaborative study involving institutions, particularly in the developing countries, who are using higher plant bioassays to detect mutagens and carcinogens.

HAROLD KLINCK was appointed Chairman of the Department of Plant Science effective June 1, 1984.

WILLIAM HENDERSHOT has joined the Department of Renewable Resources as Assistant Professor. He graduated BSc Toronto, MSc McGill,

and PhD from UBC. He will teach courses in soil science.

MARY MACKEY has been appointed Associate Professor in the School of Food Science. She holds BSc, MSc, and PhD degrees from Guelph. Dr. Mackey, a nutritionist, worked in the Extension Department of Memorial University and also taught in their Department of Biochemistry.

DUANE MARTINDALE, who won a Quebec Chercheur position at McGill, has joined the staff of the Department of Microbiology. He graduated BSc Alberta and PhD York and has since worked in the Section of Genetics and Development at Cornell University.

GERARD MILLETTE has retired from the Department of Renewable Resources following 20 years of service. He will spend the next two years as an Expert Consultant on the Ivory Coast on a World Bank contract administered by CEGIR Co. of Montreal.

CHANDRA MADRAMOOTOO has joined the staff of the Department of Agricultural Engineering as a University Lecturer. He has been at Macdonald for the past four years working on his Masters and PhD degrees.

REAL PELLETIER has retired from the Department of Plant Science following 31 years of service. For the time being at least he is enjoying newfound freedom at his home in Hudson.

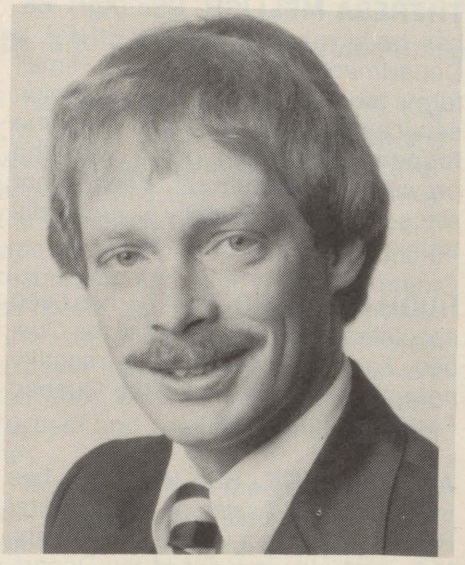
LEROY PHILIP resigned from the Department of Animal Science and joined the staff of Ralston Purina as a nutritionist.

JAMES SMITH has been appointed to the staff of the School of Food Science as Assistant Professor. He obtained BSc and MSc degrees from Strathclyde (Scotland) and a PhD from Alberta. He comes to us from Australia where he had been working for the past two years as Senior Technical Officer with the Australian Meat and Livestock Corporation.

DR. SALVATORE (SAM) SPARACE has been appointed an Assistant Professor in the Department of Plant Science, specializing in plant physiology and plant pathology. A native of Rome, New York, Dr. Sparace completed his B.S. degree at Cornell and his PhD at the University of Wyoming.

HOWARD STEPPLER retired from the Department of Plant Science following 35 years of service.

off campus



Jim Feeny

Country Canada Producer

If Quebec viewers — and others — of Sunday afternoon's CBC-TV show "Country Canada" look closely at the credits at the close of the show, they will see a familiar name. Jim Feeny, a native of Huntingdon, was recently made a producer of the show which is produced out of Winnipeg.

While studying agriculture here at Macdonald Jim became known to Quebec's rural community through his work as Secretary-Manager of the Quebec Young Farmers. He later joined the Extension Department at Macdonald and also became Executive Secretary of the Quebec Farmers' Association. He wrote regularly for the Macdonald Journal, toured the fairs, and became a familiar voice on CBC's Radio Noon, often filling in for a vacationing Marc Côté. Next stop was CBC Radio in Winnipeg where Jim spent the next few years learning about western agriculture.

When he dropped into the Journal office shortly before Christmas, he said that he is thoroughly enjoying his new job. "I'm producing stories about food and agriculture and working mostly in the prairie provinces, but I will also be dealing with Quebec agriculture in the near future and hope at that time to meet old friends in the rural community."

He had already made one other recent trip back east when he was the highly successful guest speaker at the QYF's Annual Meeting which was held in East Farnham last November. We wish Jim continued success.

JOHN LYNTON MARTIN, BSc (Agr) '46, was made an Honorary Associate of the Nova Scotia Agricultural College (NSAC) at last year's graduation ceremony. He received the honour, to quote the NSAC's Alumni News, "in appreciation for the contribution he has made over the years to ecology, agriculture, rural communities and education. John Lynton Martin was the architect of the Nova Scotia Museum System. During the years between 1965 and 1983, he created a province-wide and integrated system of local, regional and specialized museums which in the words of Dr. H.P. Moffat, former deputy minister of education for Nova Scotia, is unique and by all odds the best in any Canadian province. It was for this that he was the recipient of an Honorary Degree from the University of Kings College in May 1982."

DR. PATRICIA HARNEY, BSc (Agr) '50, MSc (Agr) '59, PhD '63, Horticulture Professor at the University of Guelph has bred a new geranium "Ontario Two Hundred." This geranium is a darker shade of red than varieties popular today and is noted for heavy blooming on vigorous plants. It has been officially released and should be available to the general public this spring.

DR. VERNON G. MACKAY, BSc (Agr) '54, MSc (Agr) '56, has been appointed General Manager of Scott Poultry Co-operative Association, Port Coquitlam, B.C. Vern is well known in the poultry industry in B.C., having lived and worked in the Fraser Valley for years.

Vern MacKay got his PhD at the University of Alberta in 1963 and has held several interesting positions since then starting as a Research Superintendent with Seagrams in Lasalle, Que. He began working his way west with positions with United Co-ops and K-Vet

in Ontario. He was Director of Marketing for the Alberta Wheat Pool and from Calgary he went in 1977 to Chilliwack, B.C., where he was Marketing Manager for the East Chilliwack Agricultural Co-op. He then became Director of Marketing for a division of the Co-op, Westvale Foods Limited, 1983-84.

Vern MacKay took time to return to Mac for Reunion last fall. "I had a great time seeing many of my classmates and friends," he said. He also mentioned that he enjoys receiving the Macdonald Journal and is particularly interested in reading news about people from Mac.

DOUGLAS AVERY, BSc (Agr) '65, became a member of the executive committee of the Ontario Federation of Agriculture at their 48th annual convention which was held in Toronto in the latter part of November. Doug Avery is a fruit and vegetable producer in the Brockville area.

DR. DAVID LEES, BSc (Agr) '65, MSc (Agr) '67, has been appointed the new Chairman of the Agricultural Research Institute of Ontario. The Agriculture Research Institute reviews research programs at the ministry's colleges of agricultural technology, horticultural research and experimental stations and makes recommendations to the Minister of Agriculture and Food to ensure that these programs meet the needs of Ontario agriculture.

Ontario's $62.5 million, five-year Red Meat Plan is aimed at improving the profitability and efficiency of the red meat industry. Last year 16 red meat advisors were assigned to agricultural offices to assist producers wih performance testing, ration formulation, and business management. They are working closely with producers to help organize the county weighing clubs which make up an integral part of the red meat programs; as well, they are working with livestock, crops, and business management specialists. One of the 16 is **DON STEVENSON,** BSc (Agr) '65. What's happened in his life since '65? Briefly he says, "I was with the N.S. Department of Agriculture and Marketing, then a brief stint with the Economic Improvement Corporation on P.E.I., thence to Ontario as Provincial Sheep Specialist, then farmed, and now working as the Red Meat Advisor (Sheep) in eastern Ontario. In the course of these travels, I have been joined by a wife (Pauline), two kids (Neil and Lorraine), a farm, one dog, five cats, 75 sheep, and a pony. Times are tough down on the farm, hence the need for the Red Meat Plan. The sheep sector, at least, can hope to make some advances in profitability through improved marketing."

THERESA MELLISH, BSc (Agr) '68, has been made supervisor of P.E.I. Department of Agriculture's small farms program which offers extension services to small-scale and part-time farmers. She has worked with the province's agricultural department since 1973, most recently as provincial training co-ordinator.

HUGH MAYNARD, Dip. '78, has been appointed Managing Editor of the *Quebec Farmers Advocate,* a monthly newspaper published by the Quebec Farmers' Association.

ARTHUR PICK, BSc (Agr) '81, has been named Assistant Agricultural Representative for Colchester County, N.S., and will work out of the Department of Agriculture and Marketing offices in Truro. Arthur Pick is a native of Center Rawdon, Hants County, N.S., and is a former national award winning 4-H member. Prior to his appointment to the Ag Rep Services Division, he worked as 4-H Representative for Cape Breton Island, a position he had held since 1981.

JODY BARCLAY, BSc (Agr Eng) '83 is a research engineer at the Kemptville College of Agricultural Technology and is at present working with an anaerobic digester designed to take the smell out of manure, produce methane, and provide a crop of single cell protein.

CHRISTIANE POIRIER, MSc (Agr) '84, has accepted a position with BASF in Toronto.

LUCE DAIGNEAULT, who is finishing up her thesis for her MSc, has accepted a position with Ball Superior in Toronto.

IAN JULIEN, has completed all the requirements for his MSc degree and has returned to his native Barbados where he is employed by the Central Agronomic Research Station in Christ Church.

deceased

CATHERINE ISABEL DECHMAN, BHS '29, in Hamilton, Ont., on July 15, 1984.

DR. WILLIAM H. McGIBBON, BSA '32.

DOUGLAS K. CAMPBELL, BSc (Agr) '42, at Vernon, B.C.

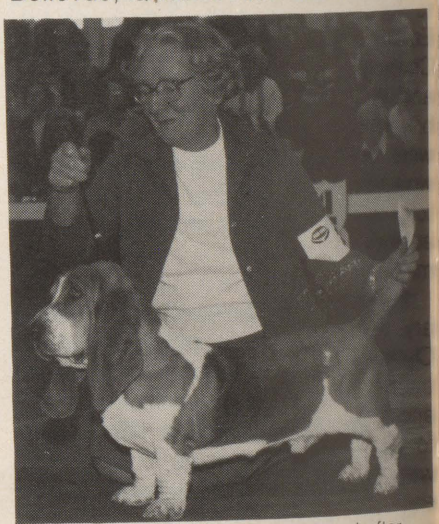
JOHN D. McCAIG, BSc (Agr) '44, at Ottawa, Ontario, on November 16, 1984.

JAMES J. DOYLE, BSc (Agr) '49, MSc (Agr) '50, at Sydney River, Nova Scotia, in August, 1984.

ROBERT H. KLINCK 1955-1984

Robert H. Klinck, BSc (Agr) '79, died tragically on December 16, 1984, while vacationing in Thailand. Robert was the son of Professor and Mrs. H.R. Klinck. Professor Klinck is Chairman of the Department of Plant Science.

A scholarship fund is being established in memory of Robert who, at the time of his death, was working towards his Masters at the University of Guelph. Donations to the scholarship fund should be made out to "McGill University Robert H. Klinck Memorial Fund" and sent to Dr. Jean David, Associate Dean, Macdonald College, 21,111 Lakeshore Road, Ste. Anne de Bellevue, Quebec H9X 1C0.



Kay Clynes showing a basset hound after retirement.

KATHLEEN CLYNES

The death of Kathleen (Kay) Clynes at her home in Hudson, Quebec, on November 18, 1984, will have a particularly sad impact on many of our

Journal readers who, as children or adults, school teachers or parents, will recall the arrival at their homes or schools of either a parcel of books or one of the familiar bookmobiles belonging to the McLennan Travelling Libraries. Kay Clynes was the Director of the Travelling Libraries from 1954 until they ceased to belong to McGill in 1978, at which time she took early retirement.

The Travelling Libraries, in existence since 1901, were the first of their kind in Canada under the auspices of a Canadian university and in 1940 were moved to Macdonald College. Boxes of books were shipped by rail at first across the entire country and then only in the province of Quebec. Kay Clynes, from Dorset, England, was persuaded by Professor Harry Avison to join the Libraries in 1954, the same year that the successful postal service was started to supply books to remote areas of the province as well as to individuals who were isolated, housebound, or bedridden. Letters received over the years from grateful recipients of these books were very gratifying to Kay and to the rest of the staff. Indeed the continuous support and appreciation of the Libraries' subscribers over the sometimes troublesome financial years was a great source of strength for all, particularly Kay.

The bookmobile service, started in 1951, continued under Kay's guidance to serve almost every town in the Eastern Townships, as well as the Chateauguay Valley, the Laurentians, and the Gatineau area. The bookmobile would be parked in schoolyards where teachers, pupils, and adults would borrow books; they also visited town libraries where the staff would augment the local supply of reading material.

In an article published in the January 1973 *Macdonald Journal* Kay Clynes mentioned that the bookmobile travelled some 10,000 miles each year and that the circulation from it alone for 1971 was 122,000 volumes. As they were read an average of 4.5 times each, the circulation was close to 400,000. A remarkable achievement and one of which Kay was justifiably proud.

With the transfer of the McLennan Travelling Libraries to the provincial government in 1978, Kay retired to her home in Hudson where she bred golden retrievers. Her kindness to all and her love of animals was outstanding. Any animal in distress commanded her immediate attention. She was particularly fond of her four basset hounds who responded to her attention by being exceptionally well behaved.

Kay's dedication to the reading public she served, particularly in her choice of the highest calibre of books for children, and her loyalty to her staff and to McGill University will long be remembered. Her knowledge and love of both books and animals will also be treasured by many others.

Those wishing to make a contribution to Kay Clynes's memory may do so by sending a donation to:

The Hudson War Memorial Library, P.O. Box 453, Hudson Heights, Quebec, J0P 1J0.

Dr. S.B. Frost, formerly Vice-Principal (Administration) writes:

I had close relationships with Kay Clynes for some 12 years when she was Director of the McLennan Travelling Libraries and I was Chairman of the University Libraries Committee. It was her task to plead with me for more resources, and mine to find as many as I could, but I could never satisfy her. She sometimes let her frustration express itself in a forthright fashion, but that only enhanced the great respect and admiration that I had for her.

Kay Clynes had the imagination to see the immense value of the work in which she was engaged. She also had the energy and strength of character to maintain the service she and her colleagues were providing in the face of what appeared at times to be insuperable difficulties. Driving heavy bookmobiles over snow-blocked rural roads in winter, emptying and refilling innumerable cartons of books for dispatch all over the province, badgering the authorities (including me) for an increase in meagre resources, Kay was ready to undertake any task that would facilitate or improve the Travelling Libraries' service. She brought a missionary enthusiasm to the direction of their operation and was able to communicate it to others. Kay know how many lonely lives were brightened and young minds were quickened by the books she and her colleagues were sending far and wide.

Kay was not simply a driving force; she was also a very likeable person and there was always the warmth of friendship in our dealings. As we remember her with respect and affection, we also remember that many, many thousands are still greatly in her debt. She made a great contribution to the life of Quebecers and did not always get the recognition she deserved.

Marianne Scott, formerly Director of Libraries at McGill (now National Librarian, Ottawa) writes:

Kay Clynes and I started working for McGill and its libraries about the same time, Kay in 1954 and I one year later. As Kay was located out at Ste. Anne de Bellevue and I was on Peel Street, our main contact was working together in the McGill University Library Staff Association on issues dealing with both working conditions and improved service. Kay was always very forthright in her comments and would brook no nonsense in her approach to issues. We found that we could work well together and later looked back on the time spent on some of our efforts with considerable nostalgia.

I found it extremely difficult as Director of Libraries at McGill when we had to face the problem of the ongoing financing of the Travelling Libraries at the time the provincial government wished to consolidate the management of all aspects of public library service. As usual Kay was positive and helpful. I knew how painful the transfer of the Travelling Libraries from McGill would be to her but, as was her style, she worked hard to ensure a smooth handing over of the operation to the Bibliothèque centrale de prêt de l'estrie. The only comfort I had through those dismal days was my belief that she was really looking forward to retirement and the opportunity to concentrate on her other love — animals. At this time, I like to remember her as I last saw her — at her home in Hudson, laughing, and surrounded by many of her excited loving golden retrievers.

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